LEARNING THE LAY OF THE LAND:
NEEDS ASSESSMENT FOR A COMMUNITY ENVIRONMENTAL APPROACH TO OBESITY PREVENTION

A Thesis

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Mary Maley

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ABSTRACT

Over 60% of adult Americans are now considered overweight or obese. This is of special concern to women because post-menopausal obesity may increase the relative risk of developing breast cancer by as much as 40%. Until recently, efforts to address the problem of obesity have centered on technical rational education and individual behavior change models. However, population-level solutions are necessary to address public health problems such as obesity. A population-level approach requires attention to both physical and social contexts within the community. In order to better understand the contexts from within which individuals make health behavior decisions, this study asks: How do community members perceive the role of the social and physical environment on overweight and obesity, and on their own eating and physical activity behavior? The thesis is that those social and physical environmental factors do influence the perceptions of community members.

A qualitative, constructivist approach in partnership with members of the community of focus was used in an attempt to answer the research question. The study objectives were 1) increased understanding of community members' perceptions of the way the physical and social environment for healthful eating and active living affect their decisions about eating and exercise, and 2) development and testing of methods for conducting a community environmental assessment. The assessment was conducted over an eight-month period in a rural New York town where over 60% of the adults were overweight or obese. Using a participatory, collaborative approach with Cooperative Extension partners and a local cancer coalition, the assessment included a study sample of 25 adults identified through purposeful and snowball sampling. Methods included 17 individual interviews, two focus group discussions, community observation, and photo elicitation.

The assessment process revealed a profile specific to a unique population and context. Data were revealed that illustrate the role perceptions of environmental influences play in eating and exercise decisions in the context of a local community. Constructs from both theory and public health practice contributed to study methods that facilitated a deeper understanding of community members' perceptions of local context and provided an important lens through which to view the health environment in the community. The study revealed data that illustrate three key themes. First, ownership of obesity is seen as both an individual and a collective problem. Second, there are conflicting goals for food and physical activity in the community. Third, there is a relationship between the social and physical environment that has not been addressed in existing models. These three key findings add an important dimension to the understanding of context within which individuals make eating and exercise decisions.

These results suggest that a community environmental assessment can be a useful strategy for understanding how the physical and social environments can affect health behavior. Learning the lay of the land requires a contextual view from both the physical and social perspectives of community residents. This study demonstrates that these perceptions can be captured and provides an important foundation for exploring locally tailored, community-based approaches to obesity prevention. More research is needed to provide both theoretical refinement and testing of this methodological approach to improve community nutrition practice and policy.

BIOGRAPHICAL SKETCH

Mary Maley was born in 1962 in Ithaca, NY. She graduated from Ithaca College in 1983 with a Bachelor of Science degree in communications management. For several years following graduation, Mary worked as a radio reporter and news director, learning about local politics, school issues, the justice system, and the activities of engaged community groups. An interest in community service led to a volunteer job in a crisis counseling agency, where she was later hired as volunteer coordinator and eventually became clinical director, supervising hotline and client advocacy services provided by volunteer counselors. Mary's interest in the needs assessment process for public health education grew out of a short-term project she undertook at Cornell University Health Services in 1998 that examined an environmental approach to alcohol and other drug abuse prevention. At the conclusion of that project, she joined the Program on Breast Cancer and Environmental Risk Factors (BCERF) at Cornell University, where she holds the position of health educator and conducts health education research. Working with colleagues at the BCERF program inspired her to continue her studies at Cornell. In 2002 she began class work toward a master's degree in adult and extension education with a minor in community nutrition while continuing her work with the BCERF program. Mary's current research focuses on building community capacity to address obesity prevention for breast cancer risk reduction using an environmental approach. She lives in Ithaca, NY, with her husband, David, and children Michael, Kevin, Brian, and Laurel.

This work is dedicated with love and gratitude to my family.

To Dave, for believing in me and supporting me every step of the way;

To Michael, Kevin, Brian and Laurel, for teaching me all the most important things;

To my parents, Marion & Robert Earle, for their immeasurable love

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Dr. Carol Devine, who served as my minor committee member, has been a mentor and an inspiration to me since I began my work with the BCERF program. She has provided innovative ideas and clear vision in her role as principal investigator of the larger study from which the work in this thesis developed. It was with her initial support that I began to explore the idea of getting a master's degree, and with her continued flexibility and understanding that I was able to complete my research while continuing my work with the BCERF program. For that I am deeply grateful.

This study would not have been possible without partnership and collaboration both on and off campus. Special thanks to my colleague Dr. Barbour Warren, who is a key member of our project team and has also supported me throughout the writing process with words of advice and encouragement along the way.

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CHAPTER ONE:
INTRODUCTION

This project evolved from work in health education by staff and faculty at the Cornell University Program on Breast Cancer and Environmental Risk Factors (BCERF). BCERF is a research-to-education program housed in the Sprecher Institute for Comparative Cancer Research in the College of Veterinary Medicine at Cornell University. The BCERF program was created in November 1995 to investigate environmental risk factors for breast cancer and to communicate scientific information on breast cancer risk reduction to scientists, policy makers, health professionals, and the general public. Since that time, BCERF has conducted critical evaluations of the literature on the effects of diet, lifestyle choices, and chemical exposures on breast cancer risk, and has produced reports on 54 individual topics.

The model of health education adopted by the BCERF program is research-to-education, in which translational research is used to develop new public health education strategies for use by professionals, policy makers, and the general public. One of the original avenues for this dissemination of this model were the 57 county offices of Cornell Cooperative Extension in New York State. BCERF faculty and staff work with community and health educators in county CCE offices to provide relevant strategies, information, and materials for use in their community health education efforts.

As the program evolved and individual projects were developed and tested, the role of the community environment (social, economic, political, and physical) in education efforts became more and more obvious. In order for science and health education to have any impact on health behavior choices, projects must begin with an understanding that individuals make health decisions in the context of their environment. The transfer of health knowledge alone is not sufficient.

With that foundation, and with funding support from the U.S. Department of Agriculture/Cooperative State Research, Education and Extension Service (USDA/CSREES), BCERF launched a new project in 2004 focused on developing and testing an environmental approach to obesity prevention for breast cancer risk reduction. The study described in this thesis is the qualitative investigation of the perceptions of community members about the ways in which the physical and social environment affects their eating and exercise decisions. Later, study data were included with data from the larger community assessment process and used to develop and implement a community-based environmental intervention that included changes in the eating and physical environment.

My role in the community assessment was that of field coordinator for the project from the BCERF program. I also led the qualitative research part of the community environmental assessment that is *described* in this study. The other members of the program team from Cornell were Co-Principal Investigators Dr. Carol M. Devine, Associate Professor, Division of Nutritional Sciences, and Dr. Barbour S. Warren, Research Associate, BCERF.

CHAPTER TWO:
LITERATURE REVIEW

Introduction

The percentage of the population that are overweight or obese has increased steadily over the last 20 years to a level of 62% (Centers for Disease Control [CDC], 2002). Over 60% of adult Americans are now considered overweight or obese as measured by Body Mass Index (BMI) > 25. BMI is a measure of body fat based on height and weight. This is of special concern to women, because post-menopausal obesity may increase the relative risk of developing breast cancer by as much as 40%.

Until recently, efforts to address the problem of obesity have centered on technical rational education planning models and individual behavior change. Technical rationality places a focus on the application of theories and techniques (Schon, 1983). However, real-world education practice requires attention to context and values. Recently, population-level solutions have been suggested (Sallis et al., 2006; Hill, Wyatt, Reed, & Peters, 2003) to address the public health problem of obesity. This community approach requires attention to both physical and social context. In order to better understand the context from within which individuals make health behavior decisions, this study asks: How do community members perceive the role of the social and physical environment on overweight and obesity, and on their own eating and physical activity behavior? The thesis is that those social and physical environmental factors do influence the perceptions of community members.

Interventions based on the technical rational application of theory and technique, including classical and naturalistic education planning models (Beder, 1986; Caffarella, 2002; Dewey, 1963; Tyler, 1949) and top-down transfer of information such as the health belief model (Hochbaum, 1958) and diffusion theory (Rogers, 1995) do not include an assessment of the perceptions of members of the

target population. These models of individual behavior change are limited in focus and scope.

Health problems are not brought on or solved in isolation. Researchers and community members must collaborate to examine the complex and locally situated context of problems such as obesity. An environmental assessment that examines perceptions of the social and physical environment for healthful eating and active living at the community level adds an important dimension to the understanding of the contexts within which individuals make eating and exercise decisions. Use of qualitative methods to assess perceptions of the community environment reflects a new way of conducting a needs assessment to address the problem of obesity.

Constructs from both theory and evidence-based health promotion models (Egger, Swinburn, & Rossner, 2003; Green, Gottlieb, & Parcel, 1991; Northridge, Sclar, & Biswas, 2003; Sallis, Grossman, Piniski, Patterson, & Nader, 1987; Swinburn & Egger, 2002) provide the basis for development of locally relevant solutions to the problem of obesity.

This literature review consists of four parts. First, I will briefly review the literature on obesity as a risk factor for breast cancer, as breast cancer risk reduction is the institutional mission of the BCERF program. Second, I will review Cooperative Extension mission and theoretical perspectives. This is important to the study because of the institutional partnership between the university and collaborators from Cooperative Extension in the study community. Third, I will review theoretical constructs from adult education relative to this study. Finally, I will review models from health promotion and practice that include the theoretical constructs that are important to learning the perceptions of community members around the eating and physical activity environment.

Obesity as a risk factor for breast cancer

Because the purpose of the larger study that surrounds this thesis is to reduce breast cancer risk by preventing obesity, it is important to briefly review the connections between obesity and breast cancer risk.

Over the last twenty years, the levels of overweight and obesity in the United States have increased to epidemic proportions, with 62% of the population considered either overweight or obese (Body Mass Index (BMI) > 25; CDC, 2002). BMI is a measure of body fat based on height and weight. Obesity as defined by a BMI equal to or greater than 30 (CDC, 2006) may double a woman's risk of developing breast cancer (Huang et al., 1997; Lahmann et al., 2002; Morimoto et al., 2002; Stephenson & Rose, 2003) and may account for 20% to 40% of post-menopausal breast cancer cases. This risk increases with greater BMI and seems to be reduced with weight loss (Morimoto et al.; Parker & Folsom, 2003). Obesity is one of few modifiable risk factors for breast cancer (Armstrong, Eisen, & Weber, 2000; Brinton, Lacey, & Devesa, 2002; Lipworth, 1995; Willett, Rockhill, Hankinson, Hunter, & Colditz, 2000), making it an important focus for public health efforts in obesity prevention. The American Cancer Society (2006) recently listed "maintaining a healthy weight" among its top cancer-risk reduction strategies, estimating that between 14% and 20% of cancer deaths are thought to be related to excess weight (Calle, Rodriguez, Walker-Thurmond, & Thun, 2003).

Body weight is determined by an interaction between genetics, eating patterns, and physical activity. Overweight and obesity are a result of an energy imbalance that can be influenced by individual, social, environmental, and societal factors (Devine, 2005; French, Story, & Jeffery, 2001; Hill et al., 2003). An environment that encourages overeating and discourages physical activity is a major contributor to the current obesity epidemic (French et al.; Hill et al.).

The Cooperative Extension system

Land-grant universities were established and provided funding by the federal Morrill Act of 1864 to educate citizens in agriculture, home economics, mechanical arts, and other practical applications of research knowledge. This included providing instruction and practical demonstrations of existing or improved practices or technologies in agriculture (United States Department of Agriculture [USDA], 2006a). To fulfill this mission and distribute the federal funds, the Cooperative Extension system was formally established by the Smith-Lever Act in 1914 to "diffuse among the people of the United States useful and practical information on subjects relating to agriculture and home economics, and to encourage the application of the same" (Smith-Lever Act, 1914, section 2).

Theoretical perspectives from Cooperative Extension

Historically, Cooperative Extension activities in health and nutrition have focused on transfer of knowledge to solve problems, drawing on both the health belief model (Bartholomew, Parcel, Kok, & Gottleib, 2000; Glanz, Lewis, & Rimer, 2002; Hochbaum, 1958; McKenzi & Smeltzer, 2001) and diffusion theory (Oldenburg & Parcel, 2002; Rogers, 1995) to translate and disseminate academic knowledge to communities (Rogers). Other models used more recently in the area of nutrition education include the transtheoretical model (Prochaska, 1979) and social cognitive theory (Bandura, 1977; Miller & Dollard, 1941).

However, while past Extension interventions were designed primarily to address problems of insufficiency, today's problems are more complex. A culture of surplus has led to increasing levels of obesity and its associated health problems. Extension educators are challenged with finding appropriate ways to combat new health and nutrition problems using models from a different era that were developed to solve different problems.

Because the health belief model and diffusion theory form the foundation for much of the historical work that has been done in Cooperative Extension, in this section I will discuss their role in addressing the public health problem of obesity.

Health belief model

It is important to begin with the health belief model (Hochbaum, 1958) because it is one of the most widely used models in health education and health promotion (McKenzi & Smeltzer, 2001). As a rational expectancy value theory, its assumptions are focused on the expected value of taking a certain action. For example, if we knew that eating vegetables would make us healthier, we would judge the value of achieving that healthful status and decide whether or not to eat vegetables. This model has led to a focus on teaching facts about the health risks and benefits of various behaviors. The health belief model suggests that if we had the appropriate knowledge we would make the "right" decision. The hypothesis of the theory is founded on the idea that health-related action depends specifically on four variables (McKenzi & Smeltzer):

1. perceived personal risk/threat (What is my risk of contracting a particular condition or illness?);
2. perceived benefit of a particular action to reduce threat of a problem (How much will my actions make a difference?);
3. perceived severity (How serious would it be if I contracted this illness?); and
4. perceived barriers to action (How hard would it be for me to make a change? Examples of barriers include cost and lack of self-efficacy.).

The decision-making process is an informal cost-benefit analysis of perceived benefits and barriers. This process is triggered by a cue to action that might be internal, such as having symptoms of disease, or external, such as hearing a health

educator's message. The health belief model is a risk-perception model that asks, "Under what circumstances does risk perception lead to adequate action?" (Bartholomew et al., 2000, p. 65) The desire to avoid illness or to get well and the belief that specific behavior will prevent or reduce illness affect the course of action (Bartholomew et al.).

The transtheoretical model (DiClemente, Crosby, & Kegler, 2002; Prochaska, 1979) also addresses individual knowledge, from the perspective of the stages of preparation for health behavior change. It is based on the primary assumption that the stages and process of behavior change are dependent upon the individual's consciousness and perceptions of proximity to the health risk and their emotional capacity for change. As an individual behavior model focused on change based on health risk, it shares many of the same shortfalls as the health belief model.

The health belief model is limited by its assumption that decisions can be made rationally. It does not consider economic, social, life-stage, historic, cultural, or physical features of the environment that affect the perception of risk and efficacy to make changes (Bartholomew et al., 2000; Glanz et al., 2002). According to Glanz et al., a more comprehensive view is necessary.

> Emphasis during the 1970s and 1980s on individual's behaviors as determinants of health status eclipsed attention to the broader social determinants of health. Advocates of system-level changes to improve health called for renewal of a broad vision of health education and promotion. (p. 7)

This more social view requires a multidimensional examination of the perceptions of the physical and social environments in which health decisions are made. This attention to context begins to bridge the gap between theory and practice (Cervero & Wilson, 2006). While social cognitive theory (Bandura, 1977; Miller & Dollard, 1941) begins to address the intersection of behavior, environment, and the individual, the focus of action still lies at the individual level. A more comprehensive,

community-level approach is called for that takes public health intervention beyond the scope of individual behavior and begins to acknowledge and address change at the environmental level.

Diffusion theory

Diffusion theory (Rogers, 1995) begins to move from a focus on the individual to a focus on community. This structurist theory is also called diffusion of innovations, or adoption diffusion theory. Diffusion theory is often used in conjunction with social network theories because its focus is on the social connections within which resources such as information are shared (Glanz et al., 2002). The focus of diffusion theory is on the channels information takes as it flows through communities and technologies, and the examination of the changes that occur as a result of this diffusion. The unit of intervention might be individuals, families, communities, political systems, or the culture at large.

Diffusion theory has been applied to a wide variety of situations, ranging from agricultural research to consumer products, school curricula, and health promotion (Oldenburg & Parcel, 2002). In Cooperative Extension, diffusion theory is evident in the educational design of the Expanded Food and Nutrition Education Program (EFNEP). A cornerstone of this program is the use of indigenous paraprofessionals who are hired and trained to work with groups and individuals to select more nutritious diets and to increase their ability to manage a food budget and improve methods for food preparation and food safety. These peer-leaders facilitate the diffusion of new information throughout the social and cultural communities that they represent (USDA, 2006b), allowing Cooperative Extension to be more effective in transferring research knowledge to community members who might not respond to other educational methods provided by sources that are not socially or culturally familiar.

According to Rogers (1995), the diffusion of innovations flows in a mathematical bell curve through several categories of people. The first users of a new idea or product are called innovators. This group is followed by the early adopters, the early majority, and then the late majority. The last group to use the new idea or product are called laggards.

Rogers (1995, as cited in Bartholomew et al., 2000) describes adopters as moving through six stages:

1. knowledge of the innovation,
2. persuasion or attitude development,
3. decision,
4. adoption,
5. implementation, and
6. confirmation.

Rogers (1995, as cited in Bartholomew et al., 2000) suggests that there are three types of knowledge that are necessary in order to make the decision to adopt: awareness of the innovation, procedural knowledge about how to adopt the innovation, and knowledge of the underlying mechanism of the innovation (how it works) (p. 293).

A key assumption of diffusion theory is that behavior change depends on how you hear or learn what you know. It has been called a predictive, descriptive, and explanatory model of population-based health behavior decisions (Green et al., 1991, p. 91). This focus on population distinguishes diffusion theory from social learning theory (Bandura, 1977), which examines social learning at the interpersonal, rather than environmental, level (Glanz et al., 2002).

Diffusion theory also assumes that behavior decisions are based solely on modeling behaviors that are observed within social or technical networks. In addition,

the theory does not address the ways that different segments of the population might react to certain innovations. There is no cultural, environmental, or temporal sensitivity. The linear, top-down model of expert-to-learner communication increases risks of perpetuating authoritarian or manipulative systems (Whale, 1989). Finally, the theory does little to address the sustainability of adoption (Oldenberg & Parcel, 2002).

Summary of Cooperative Extension theoretical perspectives

Neither individual health information nor behavior change theories nor diffusion of information alone can provide the necessary basis for health changes. According to DeJong (1998), "one of the chief lessons taught by nearly two decades of prevention research is the need for a comprehensive approach, one that not only addresses the specific educational needs of individuals but also seeks to bring about basic change at the institutional, community and public policy level" (section 2, para. 6).

The role of education in the Cooperative Extension system goes beyond the simple transfer of knowledge (Russell & Ison, 2000). Extension has an important part to play in community development, drawing upon local expertise and increasing community capacity to define and address health problems at the local level. This requires an understanding of the perceptions of community members about the ways the environment affects health behavior decisions.

Theoretical perspectives from adult education

The classical model of education described by Tyler (1949) and behaviorist perspectives (Skinner, 1968) have been the formulae for nearly a century of adult education lessons and workshops (Wilson & Cervero, 1997). However, the standard interpretation of needs assessment (Brookfield, 1986; Caffarella, 2002; Knowles, 1950; Tyler) typically presents the process as a "value-neutral, technical activity of

measuring needs" (Cervero & Wilson, 2006, p. 108). Interventions based on the technical rational application of theory and technique, including the classical and naturalistic education planning models (Beder, 1986; Caffarella, 1999, 2002; Dewey, 1963; Tyler), are not sufficient to reveal individual perceptions of the eating and physical activity environment. According to Cervero and Wilson (2006), conventional planning theories promote an "over reliance on technical rationality and instrumental problem-solving at the risk of misunderstanding context and practical action" (p. 251). Traditional educational needs assessment (Caffarella, 1999, 2002; Dewey; Tyler) has been used as a tool to discover gaps in knowledge (what do people need to know?). A new approach is required that calls for an assessment of the perceptions of the environment in which learners act. This study breaks away from top-down teaching of information and starts instead with situations and moves backward into subjects as they become relevant (Lindeman, 1926) by examining perceptions of community members about the social and physical environment.

This constructivist perspective locates meaning within the individual rather than coming from external sources. Friere (1970, 1973, as cited in Cervero & Wilson, 1994) proposed a program-planning model that "liberates people by helping find their voice, which has been suppressed by existing structures that promote social inequality" (p. 22). Understanding the perspectives of community members can help to reveal those structures. This study begins to address that by asking: How do community members perceive the role of the social and physical environment on overweight and obesity, and on their own eating and physical activity behavior? These perceptions are important in order to understand whether people are able to act upon what they know. If adult education is not only, as Cervero and Wilson (2001) attest, about "the distribution of knowledge but also of social, economic, and political power" (p. xv), then we must investigate more fully the context in which individuals

make eating and exercise decisions. An examination of the perceptions of members of the community adds an important dimension to understanding that context.

Participation

Participation with community members was an important component of this study. Participatory concepts described by Fisher (2000) address the expertise of citizens, creating a collaborative process that is more fully reflective of the local environment and that creates what Palmer (1993) calls a "community of truth" (p. 55). Fisher writes of the importance of removing barriers to participation and of repositioning the role of expert to the middle of a process instead of at the top, changing the politics of the citizen-expert relationship. This shift in power roles allows participants to become more fully able to critically examine their actions, beliefs, choices, and course of action to address common problems, contributing to improved democratic participation (Fisher). A participatory process is important to this investigation of perceptions because community perceptions could not have been revealed from the outside. Participation by members of the community in the assessment can reveal truths that would not have been accessible to outsiders.

This study includes participatory concepts in its design, but it cannot be considered participatory action research (McTaggert, 1997; Wadsworth, 1998, 2001; Whyte, 1991) because members of the community were not involved in determining the research question or methods, and the majority of research was conducted or facilitated by university researchers. According to Gilmore, Krantz, and Ramirez (1986),

> Action research . . . aims to contribute both to the practical concerns of people in an immediate problematic situation and to further the goals of social science simultaneously. Thus, there is a dual commitment in action research to study a system and concurrently to collaborate with members of the system in changing it in what is together regarded as a desirable direction. Accomplishing this twin goal requires the active collaboration of researcher

> and client, and thus it stresses the importance of co-learning as a primary aspect of the research process. (p. 161)

Participatory concepts are not without critics (Chambers, 1983, 1994; Cook & Kothari, 2001). The language of participation can be used to direct views and expectations to support those in positions of power, as Chambers (1983) writes:

> However much the rhetoric changes to participation, participatory research, community involvement and the like, at the end of the day there is still an outsider seeking to change things . . . who the outsider is may change but the relation is the same. A stronger person wants to change things for a person who is weaker. From this paternal trap there is no complete escape. (p. 141)

Planners engaged in participatory practice must be particularly aware of the power dynamics in community development work (Cervero & Wilson, 1994). There is a natural tendency of organizations, groups, and systems to reproduce themselves using inequities of information, expertise, and power (Forester, 1989). Action learning (Marsick, 1990) provides a process of critical reflection that allows all participants to more clearly see the political and power structures at play within their work. An understanding of community members' perceptions can begin to reveal structures that influence eating and physical activity behavior.

Summary of adult learning theoretical perspectives

The classical model of needs assessment (Brookfield, 1986; Caffarella, 2002; Knowles, 1950; Tyler, 1949) has provided a limited, value-neutral approach that seeks primarily to identify knowledge gaps. These models do not adequately address the context in which learners act (Cervero & Wilson, 2006). A new approach is required that calls for understanding community members' perceptions of the environment in which learners act. This constructivist perspective locates meaning within the individual rather than coming from external sources. By collaborating with members of the study community (Palmer, 1993), we can reveal perceptions that are more fully

reflective of the local environment, adding an important dimension to the understanding of the context in which individuals make eating and exercise decisions.

Models from health promotion practice

An environmental approach

The search for solutions to the problem of obesity has traditionally been centered on biological research and clinical management. However, Swinburn and Egger (2002) call for a broader vision. They suggest that the epidemiological triad (hosts, agent/vectors, and environments; Figure 1) that has been used in dealing with epidemics in the past may be an appropriate model for this problem as well.

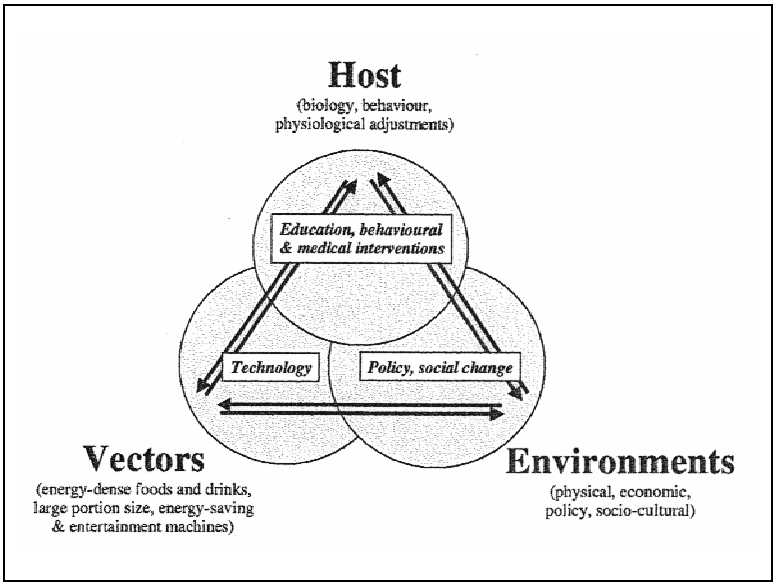

Figure 1. Epidemiological triad.
Note. From "Preventative strategies against weight gain and obesity," by B. Swinburn and G. Egger, 2002, *Obesity Rev., 3*, p. 291. Copyright 2002 by Blackwell Publishing. Reprinted with permission.

This framework takes obesity from a biomedical paradigm to an epidemic framework that has a much broader view and thus offers more options for intervention at many levels (Swinburn & Egger, 2002). Table 1 summarizes of the differences between individual and environmental approaches to obesity prevention. This is important to identify a new direction for nutrition practice and research on obesity

prevention. Use of the epidemiological triad (Swinburn & Egger) in this study provides a guide point for moving the focus from the individual to the environment. It also offers an important framework for community-level change to impact the epidemic of obesity. This approach provides a foundation for exploring the perceptions of the eating and physical activity environment among members of the study community, which is the purpose of this study.

Table 1. Individual vs. environmental approach to obesity prevention.

Individual Approaches	Environmental Approaches
Focus on changing the person.	Focus on changing the community.
Focus on individual behavior change.	Focus on structural, social, economic or policy change.
Responsibility for change lies with the individual working with health professionals.	Responsibility for change lies with community leaders, policy makers, and health professionals working with citizens.
Reach people who are interested in changing.	Reach everyone in the environment.
Educational approach.	Community development approach.

Note. From "Preventing Childhood Obesity: An Ecological Approach," by C. Devine, 2006, available at http://www.nutritionworks.cornell.edu.

PRECEDE/PROCEED

PRECEDE/PROCEED (Green & Kreuter, 2005) is a nine-phase model that guides practitioners through the steps of a contextually tailored assessment of a health issue and then uses the results of the assessment to construct the intervention. The goals are to explain health-related behaviors and environments and to design and evaluate interventions to influence both the behaviors and the living conditions that influence them (Figure 2). The process begins by focusing on the health-related outcomes of interest and working backward to diagnose which combination of intervention strategies will best achieve the objectives (Glanz et al., 2002). This model takes the epidemiological triad (Swinburn & Egger, 2002) and adds attention to the

predisposing, enabling, and reinforcing factors that influence health behavior at the individual, community, and policy levels.

The first five steps in the PRECEDE/PROCEED Model are the assessment phase, or PRECEDE: (Predisposing, Reinforcing, Enabling Constructs in Educational/ Ecological Diagnosis and Evaluation):

Phase 1 Social Assessment

Phase 2 Epidemiological Assessment

Phase 3 Behavioral and Environmental Assessment

Phase 4 Educational and Organization Assessment

Phase 5 Administration and Policy Assessment.

The focus of this phase is to identify and evaluate the social conditions that impact the quality of life of a target population. This requires program planners to gain an understanding of all of the environmental factors that influence action, including the social, policy, and physical environments. This ecological approach moves the focus of intervention to community-level influences on health decision making.

The second four steps make up the PROCEED (Policy, Regulatory, and Organization Constructs in Educational and Environmental Development) part of the model, which focuses on intervention and evaluation:

Phase 6 Implementation

Phase 7 Process Evaluation

Phase 8 Impact Evaluation

Phase 9 Outcome Evaluation.

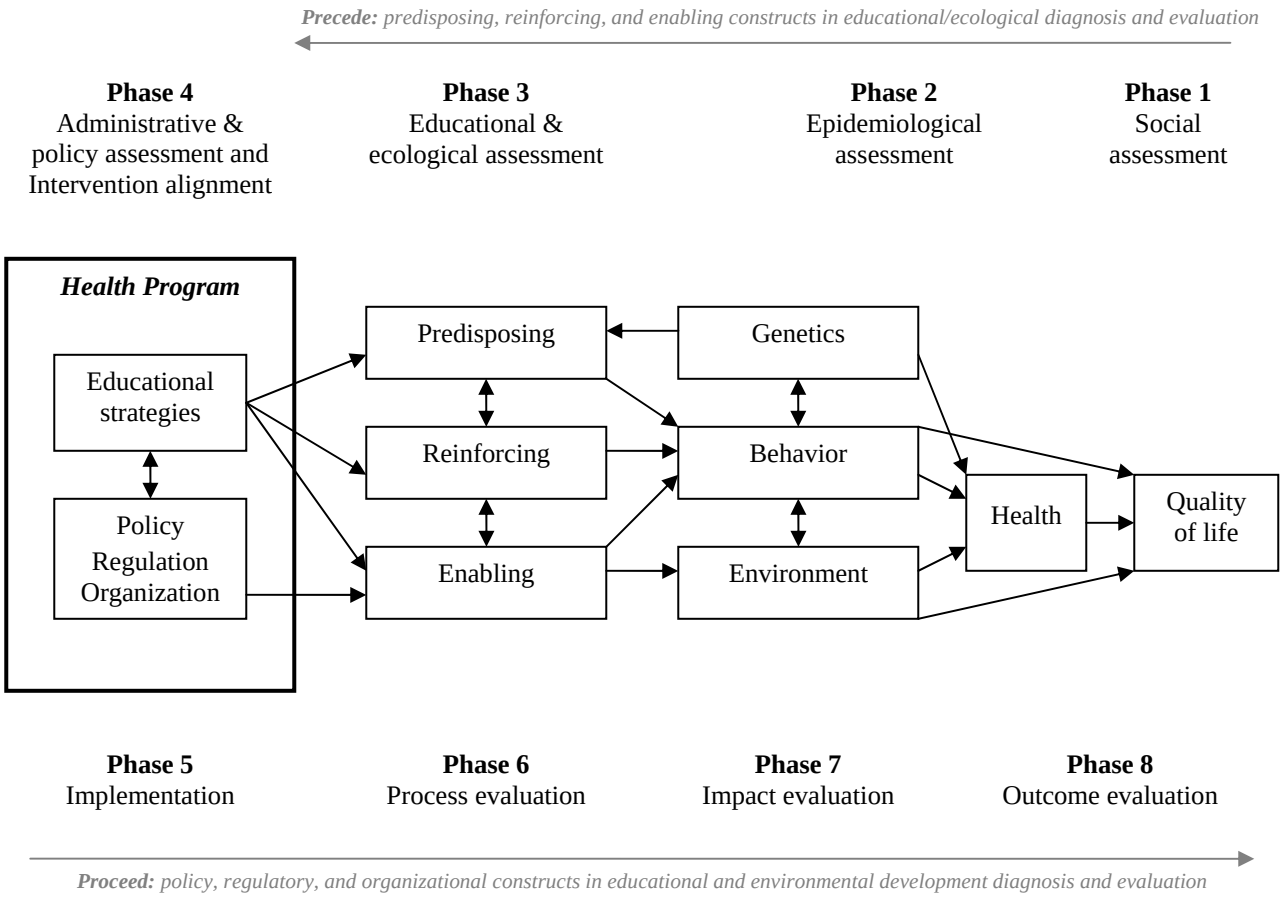

Figure 2. PRECEDE/PROCEED model.
Note. From *Health Program Planning: An Educational and Ecological Approach* (p. 10), by L. W. Green and M. W. Kreuter, 2005, New York: McGraw-Hill. Copyright 2005 by McGraw-Hill. Reprinted with permission.

During this phase, assessment data from the first five steps are used to identify both opportunities and barriers to change. Making changes at the environmental level represents a shift from traditional health education methods such as straightforward transfer of information from professionals to individuals.

A central construct of PRECEDE/PROCEED is that health and health behaviors are influenced by multiple factors that must be evaluated in order to assure appropriate intervention. If interventions are tailored to address the predisposing, enabling, and reinforcing contributors to health behaviors, health promotion activities would produce more sustainable outcomes. Another construct of the model is the importance of community participation. Because changes in health behavior are dependent on voluntary cooperation and participation of users and stakeholder groups, active participation by members of the targeted community are key to success.

This model shows promise, and does provide a framework for conducting a comprehensive assessment. However, critics have suggested that it is so complex that it may not be practical for use in the real world (Bartholomew et al., 2000; Glanz et al., 2002). Even the authors acknowledge that PRECEDE/PROCEED tries to encompass too much of a complex world (Green & Kreuter, 2005). The time and resources involved in the intensive assessment, implementation, and evaluation process may not be available to most community health education practitioners or to those with limited training and resources. Because it requires such a lengthy process, the community groups that are so key to success may quickly become frustrated with lack of apparent progress (Glanz et al.). As a result, in many cases only some of the nine phases are used. Because the model is not used in its entirety, it weakens the premise of the model as a whole.

The PRECEDE/PROCEED model acknowledges the ecological and contextual nature of health problems and calls for an assessment of locally relevant factors. This

approach provides a framework for the qualitative examination of attitudes, perceptions, and beliefs of members of the study community that is the focus of this study.

Physical and social influences on health

A planning model developed by Schulz and Northridge (2004) includes concepts from PRECEDE/PROCEED, drawing from the disciplines of sociology and environmental and social epidemiology to further the understanding of mechanisms through which social factors contribute to disparate environmental exposures and to health inequalities. Because it is not as complex as PRECEDE/PROCEED, an adapted version of this model was used in the assessment of perceptions in this study. This framework considers the way "social and environmental inequalities—and associated health disparities—are produced, reproduced and potentially transformed" (Schulz & Northridge, p. 455) at the fundamental (macro), intermediate (community), proximate (interpersonal), and health and well-being (individual and population) levels, as illustrated by Figure 3.

This model provided a guide for development of tools to explore community members' perceptions of contributors from the physical and social environments on both active-living and food-choice outcomes. Because Shulz and Northridge (2004) use the word "determinants" in their model, I have repeated that use of the word here as a reflection of their work. However, in this study, I do not consider the environmental factors explored to be determinants in the sense of behavioral determinism (Skinner, 1971). Instead, I consider these factors to be "influences on" health behavior decisions.

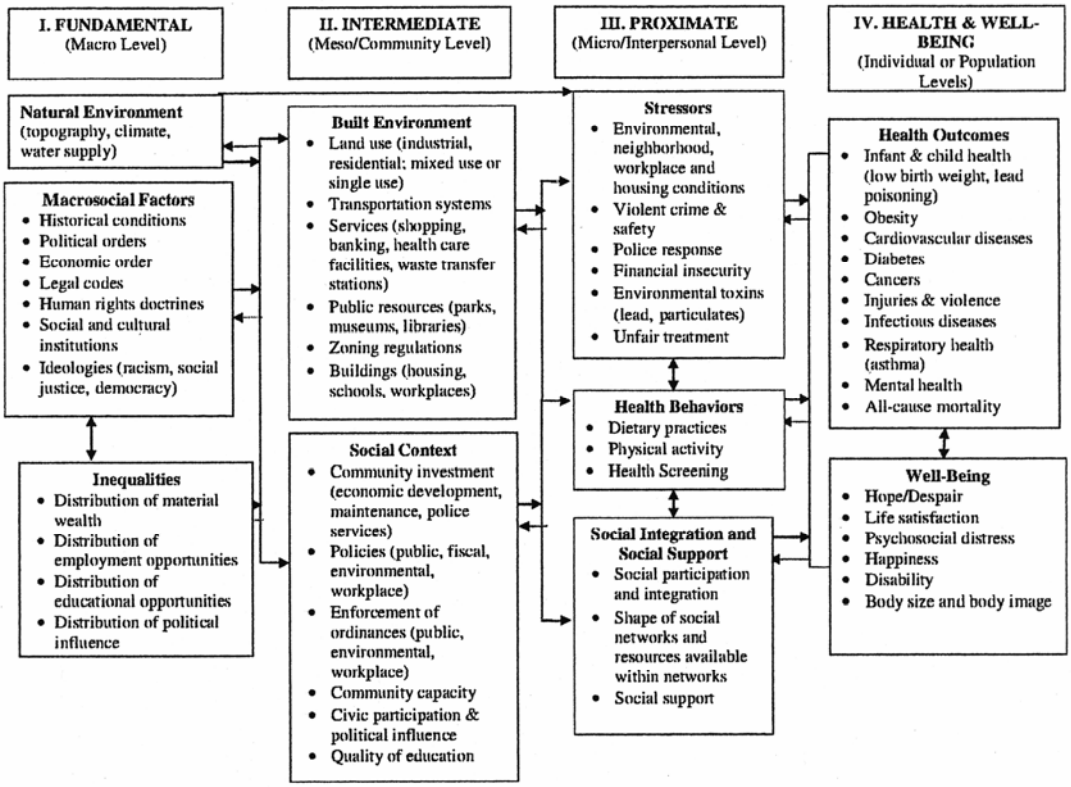

Figure 3. Social influences on health.
Note. From "Social Determinants of Health: Implications for Environmental Health Promotion," by A. Shulz and M. E. Northridge, 2004, *Health Education and Behavior, 31*(4), p. 457. Copyright 2004 by Sage Publications. Reprinted with permission.

Summary of literature review, study justification

Obesity is a significant health problem. Over 60% of adult Americans are now considered overweight or obese. One of the health problems associated with obesity is an increase in post-menopausal breast cancer risk. Health educators need new strategies to address this problem. Adult education planning models (Beder, 1986; Caffarella, 2002; Dewey, 1963; Tyler, 1949) take a technical rational, value-neutral approach that does not fully reflect community context. Individual behavior change models, such as the health belief model (Hochbaum, 1958), diffusion theory (Rogers, 1995), the transtheoretical model (Prochaska, 1979) and social cognitive theory (Bandura, 1977; Miller & Dollard, 1941), all identify the individual as the target of

intervention and also fail to fully consider the larger community context in which health decisions are made. None of these theories addresses individual perceptions of the way the social and physical environment affects eating and exercise behavior.

Models for public health intervention have begun to include the concept of environment as a key factor in health behavior (Egger et al., 2003; Northridge et al., 2003; Sallis et al., 1987; Swinburn & Egger, 2002). This environmental approach differs from traditional health education interventions because it focuses specifically on the changeable aspects of an environment, rather than the changeable aspects of the individual. An environmental approach (Swinburn & Egger), and models for assessment of community context (Green & Kreuter, 2005; Shulz & Northridge, 2004), provide an iterative framework that considers the unique features of a community environment, including the way health problems are produced and reproduced (Schulz & Northridge, p. 455). Community participation (Fisher, 2000; Palmer, 1993) is an important component of these environmental models.

However, while these models stress identification of social and physical environmental conditions, they do so without expressly seeking a deeper understanding of the perceptions that community members have about the ways in which these environmental conditions affect their eating and exercise behavior. Revealing these perceptions adds an important dimension to an understanding of community context. This study asks: How do community members perceive the role of the social and physical environment on overweight and obesity, and on their own eating and physical activity behavior? The thesis is that those social and physical environmental factors do influence the perceptions of community members. This study aims to reveal those perceptions.

CHAPTER THREE:

METHODOLOGY

The research question is: How do community members perceive the role of the social and physical environment on overweight and obesity, and on their own eating and physical activity behavior? The thesis is that those social and physical environmental factors do influence the perceptions of community members.

A qualitative, constructivist approach in partnership with members of the community of focus was used in an attempt to answer the research question. The study objectives were 1) increased understanding of community members' perceptions of the way the physical and social environment for healthful eating and active living affect their decisions about eating and exercise, and 2) development and testing of methods for conducting a community environmental assessment.

In order to answer the research question and meet the study objectives, an environmental assessment was undertaken in the study community. The activities conducted as part of the assessment process included 17 individual interviews, community observation, and two focus group discussions: one on neighborhood mapping and one on participant analysis of 113 community photographs. This environmental assessment was conducted in 2004–2005.

Assessment tools used in the assessment process were adapted from the published and unpublished literature, community healthy heart instruments (Catlin, Simoes, & Brownson, 2003); community physical activity assessments (Blades, 2002; CDC, 2004; Cohen, Andrews, & Cantor, 2002; U.S. Department of Transportation, 2004); worksite assessments (California Department of Public Health Services); social support for diet and exercise (Sallis et al., 1987); and social norms for diet and physical activity (Voorhees & Young, 2003).

The model that was used to tie these tools together is an adaptation of a broader model suggested by Northridge et al. (2003) to assess perceptions of the ways in which the structural and social environment contributes to both physical activity and food choices. This adaptation is illustrated by Figure 4. In addition, data collection instruments included open-ended questions to reveal perceptions of overweight and obesity in the community and community capacity for change.

The methods process used in this environmental assessment of community perceptions was unique because the focus was on perceptions of both the physical and social environments, rather than just on physical features and facilities in the community. In addition, the participatory process placing the role of "expert" with community members facilitated a more locally tailored assessment process. Perceptions are an important feature of a community assessment that have not been included in traditional models. Use of these methods reflects a new way of conducting a community environmental assessment that is designed to reveal important community perceptions about the eating and physical activity environments.

Study site and overview of activities

The study was conducted in the Delaware County town of Stamford, in the northern Catskill Mountains of New York State. Because of the collaborative and public nature of the study, confidentiality was not promised except for the removal of names from interview and focus-group transcripts.

The town of Stamford covers 48 square miles with 40 people per square mile, encompassing the villages of Stamford and Hobart and the surrounding rural area. The population in 2000 was 1,943 people. The community had a median household income of $34,148 in 2000. The primary industries are education, health, services, manufacturing, and retail (U.S. Census Bureau, 2000). This location was selected for the following reasons:

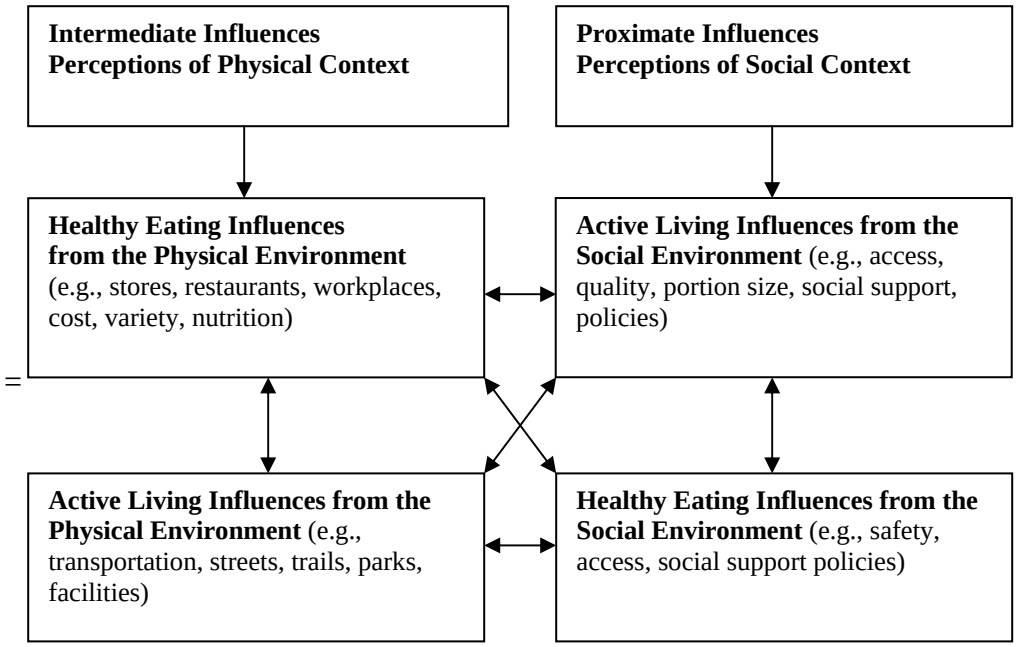

Figure 4. Adaptation of social determinants of health.
Note. From "Social Determinants of Health: Implications for Environmental Health Promotion," by A. Shulz and M. E. Northridge, 2004, *Health Education and Behavior, 31*(4), p. 457. Copyright 2004 by Sage Publications. Adapted with permission.

- The substantial incidence of overweight and obesity among adult women: greater than 60% of the adult population is estimated to be overweight or obese (NYS DOH BRFSS, 2003).
- The presence of an Extension association with a demonstrated track record of community-based action, including collaborating with the BCERF program and local community groups on other health and education projects related to breast cancer risk reduction.
- The presence of a grassroots cancer coalition with a ten-year history focused on cancer control and education. Its membership includes community volunteers, cancer survivors, community leaders, business merchants, health care providers and representatives from Public Health Nursing Service, Healthy Living Partnership, American Cancer Society, Catskill Area Hospice

and Palliative Care, Inc., Rural Health Network, Cancer Information Service, The Leukemia and Lymphoma Society, and Cornell University Cooperative Extension.

- Willingness of community leaders to participate in the pilot as determined by enthusiasm expressed during meetings and telephone calls and dedication of time necessary for meetings and project activities.

Project activities and timeline

The assessment activities associated with the over-arching project (of which this study is a part) included surveys (paper and telephone), document review, interviews, focus group discussions, mapping, observation, and photographs. The summary and timeline of these activities is represented in Table 2. All the data were presented to the community at the conclusion of the project for local analysis. However, for the purpose of this thesis, my focus is on the qualitative assessment represented by the interviews, focus group discussions, observations, and photographs. These methods allowed a deeper exploration of the perceptions and attitudes of members of the community about environmental influences on healthy eating and active living.

Justification for use of qualitative methods

A qualitative constructivist approach was used to answer the research question (Denzin & Lincoln, 2003) and to obtain rich, descriptive information from participants themselves to illustrate their experience and perceptions about environmental issues related to healthy eating and active living in their community. The need to understand perceptions of members of the study community makes this project appropriate for the use of qualitative research methods. This approach acknowledges what Mason (2002) calls the “unique experience of each participant including their interpretations,

perceptions, meanings and understanding as primary data sources" (p. 56). Through the words of participants themselves, information was gathered relative to perceptions of the many environments and conditions that either facilitated or hindered decisions about active living and healthful eating. A deeper understanding of this unique community context was better attained through the use of qualitative methods (Denzin & Lincoln, 2003).

Patton (2002) makes a compelling case for including the use of qualitative methods in studies such as this one:

> If you want to know how much people weigh, use a scale. If you want to know if they're obese, measure body fat in relation to height and weight and compare the results to population norms. If you want to know what their weight means to them, how it affects them, how they think about it, and what they do about it, you need to ask them questions, find out about their experiences, and hear their stories. A comprehensive and multifaceted understanding of weight in people's lives requires both numbers and their stories. (pp. 13–14)

Table 2. Assessment project activities that took place between April of 2004 and May of 2006.

Date	Activity	Detail
April–May 2004	Partnership with Cornell Cooperative Extension of Delaware County and the Delaware County Cancer Coalition	Meetings were held to describe the project and discuss possible partnership activities
June 2004	Tour/observation visit with photographs	Two researchers visited Delaware County and were given a driving tour and orientation to the villages of Stamford and Hobart including a review of tax maps of local property usage
June–August 2004	Interviews	Individual interviews were conducted with 17 community members during 5 visits to Stamford
September 2004	Formation of Community Leadership Coalition	Invitations to join this group were generated using snowball sampling (Patton, 2002)

Table 2. (Continued).

October 2004	Baseline survey Mapping and focused discussion	First meeting of community leadership coalition
November–December 2004	Checklists / Observation Foods available Active living environment	Checklists and observation were completed by community partners (9 grocery/convenience stores and the physical and natural environment for active living)
January 2005	Photo elicitation	113 photographs from 8 cameras, focused discussion at leadership coalition meeting
February–March 2005	Random sample telephone survey	100 women surveyed on perceptions of obesity, the physical and social environments for healthful eating and active living
February–April 2005	Data analysis	Collaborative process among members of Cornell research team
May 2005	Findings discussed with Community Leadership Coalition	Results from assessment presented, interpretation provided by leadership group
June 2005	Findings presented to community	Results presented by both Cornell researchers and members of leadership group. Community interpretation in brainstorming session of opportunities for action
July–August 2005	Community survey—prioritization matrix	Opportunities suggested by community organized into a matrix to rate: resources needed, community support, sustainability, daily impact and reach of each option
September 2005	Interventions selected	Interventions selected based on community rankings (using prioritization matrix)
February–May 2006	Intervention period	12 weeks. The two interventions were: Starting community walking groups and adding healthy food options to events where food is served

In the following sections, I will detail the use of interviews, observation, mapping, focus group discussion, and photo elicitation in the data collection process, including justification, sampling rationale, data collection process, and analysis for each method.

Interviews

The essence of the question required investigation of the complex and contextually situated perceptions of members of the study community. Conducting interviews allowed the researcher to gather deep and detailed descriptions about perceptions of the way the physical, social, economic, and political environments have impacted levels of obesity among members of the community. Interviews were chosen because, as Patton (2002) noted, “the perspective of others is meaningful, knowable and able to be made explicit” (p. 341) and because, as Mason (2002) wrote, “people’s knowledge, views, understandings, interpretations, experiences and interactions are meaningful properties of the social reality” (p. 63) that the question was designed to explore.

Interviews were conducted in person, in locations convenient to the subjects, in order to create a more comfortable setting for interviewees. A tape recorder was used to record data during the interviews, and participants provided informed consent. This method was appropriate because of the limitations of my capacity to both carefully listen to the responses being given and simultaneously take thorough notes. Important nuances would have been missed with note taking alone. Audiotapes were transcribed verbatim. In addition, reviewing the transcripts while listening to the original audiotapes added to my understanding of each interview and engagement with the content that helped more clearly reveal its meaning and depth.

Interviews were conducted using a constructivist method and an open-ended interview guide. This semi-structured approach provided a balance between reducing

interviewer bias by standardizing the order and topics of discussion and allowing subjects the latitude to make open-ended responses (Patton, 2002). In addition, it allowed more exploration of each respondent's perspective within the framework of questions developed in advance to ensure that all the topics related to study objectives were covered in each interview. Follow-up questions were generated based on the responses given as related to the objectives of the study.

This structured, open interview format helped achieve the goals of gaining a deep understanding of the perceptions and knowledge of study participants and still created a format that enabled themes and information to be extracted that were useful in data analysis. Use of an interview guide maximized the legitimacy and credibility of the data collection process while still allowing the flexibility to probe topics that came up spontaneously. Open-ended questions allowed respondents to maintain their own voice in their responses, and by collecting the same information from each respondent, interviewer bias can be reduced (Patton, 2002).

Sampling rationale

Purposeful sampling of participants for the interviews was identified in collaboration with key partners in the office of Cornell Cooperative Extension of Delaware County and the Delaware County Cancer Coalition to represent the broadest possible range of community constituencies as relevant to the project. Study objectives and constructivist theory were used to guide the selection process, creating a way to "understand the way individuals construct reality, including perceptions, 'truths,' explanations, beliefs and world view and the consequences of these constructions for behaviors" (Patton, 2002, p. 96) in terms of the ways in which the environment impacts obesity levels in the community.

A list of 50 people was generated during a Cancer Coalition meeting in May of 2004. Attempts were made to identify individuals who represented a diverse range of

community residents, including religious groups, schools, medical professionals, local businesses, village and town government, and public service groups. In addition, I sought representation from people of different age groups, socioeconomic status, and ethnic backgrounds. We limited the list to those who lived or worked in the study community. While both men and women were included, our focus was primarily on women because of our institutional focus on breast cancer risk reduction.

The sample of participants for interviews and focus group discussions included 27 individuals ranging in age from 20s–80s. This group included 3 men and 2 African Americans. The other participants were Caucasian women. The length of residence in the study community ranged from a low of 7 years to 50+ years. As we developed the list and conducted interviews, we asked, who isn't here? Who else should we be talking to about these issues? This snowball sampling (Patton, 2002) was used to locate information-rich critical informants. Individuals represented the following affiliations:

- clergy and religious groups
- schools: teachers, administrators, PTA, and school board
- business, industry, and food service
- heath providers and service agencies
- Cancer Coalition, cancer survivors
- elected officials and village administrators
- Cooperative Extension
- fitness professional
- WIC
- fire/EMT personnel.

However, this sample was biased toward individuals interested in community participation and connected to groups or others in the study area. This study would

have been strengthened by including individuals from a wider range of educational and economic and cultural profiles.

Purposeful sampling enabled us to "select information-rich cases whose study will illuminate the questions under study" (Patton, 2002, p. 230) in order to "generate a close-up, detailed and meticulous view of the particular contexts or phenomena" (Mason, 2002, p. 125) related to connections between obesity and the environment in the town of Stamford, NY. Interviews were conducted until no new information or themes were observed in the data. This point of saturation has been identified as a valid measure to use when establishing sample size (Gruba & Lincoln, 1989; Krueger, 1994; Sobal, 2001; Strauss & Corbin, 1990). The final sample included 17 interview participants.

Data collection

Interviews included some data that were excavated (what is the nature of the way things are?) and some that were constructed (how do you imagine things might be?). Questions were developed from theory from the initial literature review in collaboration with project colleagues. Follow-up questions were developed from inductively derived themes.

The interview questions (the interview guide may be found in Appendix B) were designed to:

- assess the perceptions of obesity as a health problem in the community of focus;
- determine if members of the community think that the problem of obesity is mostly a personal one or a community one;
- assess perceptions of the ways the physical environment for healthy eating and active living affect eating and exercise decisions;

- assess perceptions of the ways the social environment for healthy eating and active living affect eating and exercise decisions; and
- extract themes for further exploration.

The way questions were ordered came from an organizational framework that moved from situational to theoretical and then back to situational. The first was a general opening question to introduce the topic of health and obtain themes of concern relevant to the local area:

What are some of the health problems that concern people in this area?

Then, I narrowed the focus of general health to researcher-driven, theory-based questions:

What about breast cancer?

Are any of these of concern to you or your family?

How would you describe the body weight of people in this community?

How prevalent?

How much of a problem?

Who is affected?

The next question was a knowledge/attitude assessment, theory-based question:

What have you heard about the relationship between body weight and breast cancer risk?

The next questions were attitude assessment, theory-based questions:

Some people think that body weight is mostly an individual concern. What do you think about that?

Some people think that the problem of overweight is a community concern in addition to being an individual concern. What do you think about that?

Then I asked a set of situated questions to develop constructed knowledge about the topic:

What are some of the ways that the community might contribute to the problem of overweight?

The way the community is laid out

Opportunities, costs for active living

Sources, types, cost of food

Social expectations for eating and exercise

Social events: church, school, recreation, arts

Policies, institutions (schools, recreation, work places)

What are some of the ways that the community might make it easier for people who live here to maintain healthy body weights or to lose weight if they were overweight?

The way the community is laid out

Opportunities, costs for active living

Sources, types, cost of food

Social expectations for eating and exercise

Policies, institutions (schools, recreation, work places)

Additional situational questions related to community capacity and participatory practice follow:

If a group wanted to take action here in Stamford to address the issues of body weight and breast cancer risk at the community level, what kinds of things should be considered?

What kinds of groups or people should be included?

How do you think people like you should be involved?

Is there anything else you'd like to say?

Is there anyone else in the community that would be helpful for me to speak with?

Data analysis

The questions in the interview guide provided a framework by which to begin data analysis by coding the data and identifying patterns (Patton, 2002). Development of the categories for this coding process included three procedural elements: organization, verification, and nomination (Constas, 1992). The organization of coding categories came from the literature on which project objectives are based and through the iterative and constructivist process of interviews with participants themselves. Verification was based on both empirical and participative strategies. Nomination of coding categories was based on both study objectives and post-priori discoveries made during the interviews. Categories were specified in an iterative process that included some pre-established categories and others that evolved during the research process. A constant comparative method allowed the research team to analyze different perspectives on central issues (Patton).

Glaser and Strauss (cited in Lincoln & Gruba, 1985) described the constant comparison method as following four distinct stages:

1. comparing incidents applicable to each category,
2. integrating categories and their properties,
3. delimiting the theory, and
4. writing the theory (p. 339).

According to Goetz and LeCompte (1981), this method "combines inductive category coding with a simultaneous comparison of all social incidents observed" (p. 58). As social phenomena are recorded and classified, they are also compared across categories. Thus, hypothesis generation (relationship discovery) begins with the analysis of initial observations. This process undergoes continuous refinement throughout the data collection and analysis process, continuously feeding back into the process of category coding. According to Goetz and LeCompte, "as events are

constantly compared with previous events, new topological dimensions, as well as new relationships, may be discovered" (p. 58).

Interview transcripts were coded by identifying and marking units according to topic, then sub-grouping these topics according to common themes. I used color-sensitive codes to identify text relevant to the study objectives by highlighting text in the transcript, taking notes, and writing in transcript margins. This process allowed the research team to identify themes and track patterns that emerged from the data for the whole participant set as well as for each individual.

Strategies used to increase the credibility of findings included peer debriefing through discussion about the emergent issues in research findings (Lincoln & Gruba, 1985) in meetings of the research team and consultation with Extension partners in the community during telephone calls and meetings.

Observation

To further reveal perceptions of community members about environmental influences on eating and exercise decisions, this study included two different observation activities. The first was of community settings that might either support or challenge individual decisions for good health in the context of the physical and social environments, and the second was an observation of activities at a meeting of the Community Leadership Coalition.

Observation was one part of a triangulation of methodologies, theories, data, and investigators that were used over the course of the project. This triangulation (Patton, 2002) strengthened the validity of the study (Denzin & Lincoln, 2003). The use of observation as a data collection method supplemented the interviews, photographs, and guided discussions that were conducted.

Observation reveals dimensions of understanding that cannot come from other forms of data collection. Observation methods can enhance data collection in

qualitative research by allowing the researcher to obtain a description of the environment and to gain an understanding of the context that might not have come from other information sources. Observation also affords the researcher the opportunity to see things others do not mention, do not pay attention to, or might be unwilling to discuss (Patton, 2002). According to Mason (2002), social explanations "require depth, complexity, roundedness and multidimensionality in data, rather than surface analysis of broad patterns, or direct comparisons" (p. 86).

During the observations, I was conscious of the role I played as part of an organic process. By observing, I become part of something I cannot fully experience (Patton, 2002). With that in mind, I identify my observational approach as that of participant observer, and recognize that, as Denzin and Lincoln (2003) saw, "within the interactive context of observational research, roles mutate in response to changing circumstances and are never defined with finality" (p. 125).

The focus of my observations came from the research question and the objectives of my study. The research question was: How do community members perceive the role of the social and physical environment on overweight and obesity, and on their own eating and physical activity behavior? The objectives of the study were: 1) increased understanding of the perceptions of the way the physical and social environment for healthful eating and active living affect decisions about eating and exercise among members of the study community, and 2) development and testing of methods for conducting a community environmental assessment. These provided a place for me to begin to direct my gaze (Mason, 2002) as I planned my observations.

Observation #1: Community tour

In June 2004 I made a trip to Delaware County with another researcher from the project to meet with two members of the Cornell Cooperative Extension team. They agreed to provide us with a driving tour of the area. Using an observation guide,

I took open-ended notes on what I saw while they told us about features of the community environment. The other researcher took photographs. This visit provided us with an important orientation to the community.

My observation guide included key categories of features to note. Topics on this guide were:

1. public works (presence and condition of streets, sidewalks, bike lanes, lighting, etc.);
2. buildings and facilities (presence and condition of housing, schools, parks, community centers, churches, work places, stores, medical facilities, fitness centers, etc.);
3. sources of food (restaurants, stores, farm stands, etc.); and
4. topographical features: any topographical features unique to the area that might factor into our plans (such as railroad bed trails, natural scenic areas, bodies of water, etc.).

Observation #2: October 2004 meeting

Nominations gathered during both interviews and collaborative discussions with Cornell Cooperative Extension partners were collected for invitation to participate in a community leadership group to work more closely on the project in the community. Participants in this group included Cooperative Extension educators, civic leaders, cancer activists, members of the Delaware County Cancer Coalition, health and nutrition professionals, and representatives of local industry and business, human service agencies, schools, and clergy.

The first meeting of the group took place in a central community location (the conference room of a local skilled nursing facility) in October of 2004. There were 12 participants at the meeting. This meeting had several key purposes:

- an introduction of the group members to each other and to the Cornell research team;
- background on the study, including an overview of the scientific foundation for the study (breast cancer risk reduction through obesity prevention);
- introduction to environmental versus individual approaches to the problem of obesity;
- collection of baseline survey data from this group; and
- focus group mapping activity and discussion of perceptions of the social and physical environment for healthful eating and active living.

Mapping activity and discussion

It is this focus group mapping activity and discussion in which I was an observer/participant that will be the focus of this section of this report. The mapping activities were developed by the Cornell research team from a model tested by Bowen (2005).

During this activity, the 12 participants self-divided themselves by interest into two groups. The first group discussed environmental factors related to active living, and the second group discussed environmental factors related to food choice. One BCERF researcher acted as the facilitator for each group. As a trigger to discussion, each group member was given paper and colored pens and asked to take a few minutes to draw a map of her/his own environment for either eating or active living. For example, in the eating group, people were asked to map or list places outside of home where food is eaten (e.g., work, restaurant, car, event) and then all the places where that food came from (e.g., grocery store, convenience store take-out, vending machine, family, farmer's market).

The active-living group was asked to make a map or a list of all the places where they are physically active in the community (e.g., home, work, park, road, event). For each place, they were asked to list the kinds of activity that took place there and when the activities occurred.

Each group then participated in small-group discussion and sharing of their maps while the BCERF facilitators acted as recorders to list comments from the groups. Prompts from the facilitators included the following: As you were making your maps, what sorts of things did you consider? What do you notice about your map? What are some of the ways that the places you eat and get food in the community affect the way you eat (probes: access, distance, availability, quality, cost, type, size)? What are some of the ways that the community characteristics affect your physical activity (e.g., access, distance, availability, quality, cost, type, time)?

After the groups took about 20 minutes to complete this exercise, we came together for 20 minutes of sharing between the groups. During this part of the meeting, group members told each other what they discussed, and Cornell researchers listened and took notes.

Data analysis: Observation

During and after each of the observation activities (the community tour and the Leadership Coalition meeting), I took as many notes as possible about what was observed. During the tour I was able to take notes as the local Cooperative Extension research partners drove us around. During the meeting I was acting as an observer/participant, so the notes taken were also part of the mapping activity and focused dialogue. More-detailed notes were taken from memory after the meeting. I coded these notes using categories by theme as they related to the project. In addition to an individual review of these notes, I reviewed the photographs and minutes taken during the focused discussions. Analysis was also conducted in iterative dialogues

with other members of the research team as we traveled 2.5 hours by car from the study community back to Cornell.

Photo elicitation

The photo elicitation method here is derived from the Photovoice technique developed by Wang (2004) and is based on the theoretical literature on education for critical consciousness (Freire, 1973), feminist theory (Pollock, 1996), and documentary photography.

Photovoice blends a grassroots approach to photography and social action. It provides cameras not to health specialists, policy makers, or professionals, but to people with the least access to those who make decisions affecting their lives.

According to Wang (2004), Photovoice has three goals. It enables people to record and reflect their community's strengths and problems. It promotes dialogue about important issues through group discussion and photographs. Finally, it engages policymakers. It follows the premise that what experts think is important may not match what people at the grassroots think is important (Wang).

Photovoice is a process by which people can identify, represent, and enhance their community through a specific photographic technique. It entrusts cameras to the hands of people to enable them to act as recorders, and potential catalysts for social action and change, in their own communities. It uses the immediacy of the visual image and accompanying stories to furnish evidence and to promote an effective, participatory means of sharing expertise to create healthful public policy. This method of photo elicitation provides another medium to examine community members' perceptions about the way the physical and social environment affect their eating and physical activity choices.

Data collection: Photographs

For the purposes of this study, members of the Community Leadership Coalition were given disposable cameras. They were asked to document their own eating and physical activity environments by carrying the cameras with them and taking pictures of whatever they thought was relevant. Participants were asked not to take photos of identifiable individuals. Each participant was given a postage-paid envelope to use to return the camera to Cornell, where the film was developed. Eight out of 11 distributed cameras were returned, and 113 photographs were developed. Those photos that included identifiable individuals were excluded. The images were printed and posted on display board. Those boards were carried to the January 2005 meeting of the Community Leadership Coalition for display and discussion.

Data collection: Focus group discussion

Focus group discussions provide insight into the attitudes, perceptions, and options of the group (Krueger, 1994). Groups help to identify both divergent opinions and issues of consensus. Meaning is constructed within the group process; however, focus groups are not intended to develop consensus (Krueger) even though consensus can be produced as a byproduct of the process. Focus groups are designed for determining the perceptions, feelings, and manner of thinking about the issues at hand.

During this exercise, I acted as facilitator. The discussion was tape-recorded in order to capture all the comments that were made by members of the group. The questions on my discussion guide were organized to move from theoretical to situational in context and were organized around the themes of the physical and social environments for eating and active living.

My first questions provided an orientation to the activity:

Taking photographs allows us to look at our surroundings in a new way.

Sometimes we notice things with the camera that we wouldn't otherwise see.

What sorts of things did you notice while you were doing this?

What were some of the things it made you think of?

From there the questions moved to the photographs from the community cameras:

Choose a photo or two from the display boards that you'd like to tell us about in regard to the physical activity environment.

What did you like about the photo you chose?

What does it represent?

Of all the photos we've seen of the physical activity environment, what do you think is most important?

What parts of the physical activity environment aren't represented in these photos?

This activity and questions were repeated for the eating environment.

Then, we moved to summary questions:

How well do you think the photos we've seen represent the eating and physical activity environment in this community?

Have we missed anything?

Data analysis: Photo elicitation

The analysis of photographs was conducted during the focus group discussion. Members of the group identified relevant photos and their associated meanings, perceptions, and themes. In addition, after the meeting I reviewed the transcripts and notes from this meeting and coded those by source and theme as they related to the project objectives.

Overview of the community assessment: Methods

Interviews, observation, photo elicitation, and focus group discussion were designed to reveal the perceptions of members of the study community about the way

the physical and social environment affects eating and exercise decisions. The triangulation of these data sources strengthened the findings. Use of these methods reflects a new way of conducting a community environmental assessment that is designed to reveal important community perceptions about the eating and physical activity environments.

Perceptions assessed included views of obesity in the community and the role of the social and physical environment on eating and exercise behavior. The assessment of perceptions of the physical environment for active living included streets, trails, parks, sidewalks, policies, access, and transportation. The assessment of perceptions of the physical environment for healthy eating included food availability, cost, quality, restaurants, groceries, conveniences stores, take-out, polities, and workplaces. The assessment of perceptions of the social environment for active living included access to physical activity resources, attitudes, social norms, acceptance, social support, and policies for physical activity. The assessment of perceptions of the social environment for healthy eating included availability of healthy options, attitudes, social norms, and social support for healthy eating. Table 3 illustrates the assessment activities of this study organized by the environmental feature each helped assess.

Table 3. Activities by assessment category.

Environmental Dimension	Activity	Timeframe
The Physical Environment for Healthy Eating	Community visual observation Mapping and focus group discussion (12 members of Community Leadership Coalition) Photo elicitation, leadership group	June 2004 October 2004 January 2005
The Physical Environment for Active Living	Community observation June 2004 Mapping and focus group discussion (12 members of Community Leadership Coalition) Photo elicitation, leadership group	June 2004 October 2004 January 2005
The Social Environment For Healthy Eating	17 individual interviews: included locally concerned citizens from business, education, local government, clergy, health care, and general population to assess the attitudes, perceptions, values and beliefs around healthy eating in a community Photo elicitation, leadership group	July and August 2004 January 2005
The Social Environment for Active Living	17 individual interviews: included locally concerned citizens from business, education, local government, clergy, health care, and general population to assess the attitudes, perceptions, values, and beliefs around active living in the community. Photo elicitation, leadership group, January 2005	July and August 2004 January 2005
Social Norms: Obesity	17 individual interviews: included locally concerned citizens from business, education, local government, clergy, health care, and general population to assess the attitudes, perceptions, values, and beliefs on body size in the community	July and August 2004
Community Capacity for Change	17 individual interviews: included locally concerned citizens from business, education, local government, clergy, health care, and general population to assess the attitudes, perceptions, values, and beliefs on body size in the community	July and August 2004

Data quality and limitations

With the understanding that I could never fully understand or represent the perceptions of others, important questions that help determine data quality come from the criteria for trustworthiness (Lincoln & Gruba, 1985) and guidelines developed by Huberman and Miles (2002). These questions include the following: Are the data credible? Dependable? Transferable? Confirmable? How representative are they? What researcher effects should be considered? Are the results reliable and replicable? To address these questions, important considerations were included in this study.

Credibility and representativeness were addressed by using both snowball sampling (Patton, 2002) and the principles of power suggested by Cervero and Wilson (1994). We were able to attain the widest possible sample of participants while continuing to ask, Who *else* should be involved in this process? However, even with careful attention to this question, the study sample was limited by access to the represented social networks of individuals who participated in the study. While the study sample included people of different age, gender, ethnicity, income, and education, willingness to participate in the research process created a self-selected group. The credibility and representativeness of the study would have been strengthened by including more individuals of lower socioeconomic status and those who were less engaged in the civic organizations within the community.

The use of multiple assessment methods and participant groups provided triangulation of data source, method, and data type, which increased the dependability and validity of the study. Qualitative studies emphasize procedures for minimizing investigator bias, including systematic data collection and cross-checking and cross-validating sources during fieldwork (Patton, 2002). In this study, research effects were minimized by factors that included the length of the study period and multiple meetings and discussions about the meaning of the data both with other researchers

and with members of the study community. Even though time and funding ultimately limited the number of assessment activities that could be conducted, the data produced from those activities did reach a point of saturation (Sobal, 2001).

Confirmability was addressed by the iterative process of group discussion of the data, including both members of the Cornell research team and of the study community. This process included discussions both immediately after data collection activities and scheduled meetings with both researchers and community partners at later dates. By reviewing the data multiple times with multiple reviewers over several months, we were able to check and cross-check themes for significance.

Transferability in this study would be related specifically to the assessment methods. Data are specific to place and context, so the results of the assessment would not be transferable. However, methods used and tested during this study could be used in other communities. Thick descriptions (Lincoln & Gruba, 1985) help to understand the situatedness of the data and the function of the assessment tools involved in data collection.

CHAPTER FOUR:

FINDINGS

Introduction

The research question that guided this study was: How do community members perceive the role of the social and physical environment on overweight and obesity, and on their own eating and physical activity behavior? The thesis is that those social and physical environmental factors do influence the perceptions of community members. Findings that emerged from the data support this thesis. Perceptions were revealed that were unique to population and context and that illustrate the role these perceptions of environmental influences play in eating and exercise decisions in the community. The study revealed data that illustrate three key themes. First, ownership of obesity is seen as both an individual and a collective problem. Second, there are conflicting goals for food and physical activity in the community. Third, there is a relationship between the social and physical environment that has not been addressed in existing models. These three key findings add an important dimension to the understanding of the context in which individuals make eating and exercise decisions.

The methods and instruments used provide a model that can be tested in other communities to assess perceptions of the eating and physical activity environment. A summary of study results is illustrated by Table 4.

Table 4. Summary of results.

Finding	**Perceptions reported by study participants**
Ownership of obesity is seen as both an individual and a collective problem	Obesity is a problem here Obesity is an individual problem Obesity is a collective problem
There are conflicting goals for food and physical activity in the community	Food is a very big part of the social and work life Abundant food and large portion size are a sign of hospitality More people are eating take-out and convenience foods Family schedules prevent a regular dinner time Cost may be a factor for some in decisions about healthy eating The gym is not socially comfortable Culture here accepts inactivity Workplace groups might be an option to consider
There is a relationship between the social and physical environment	Resources are available if people want to use them Activity choices are limited for adults The railroad bed is not used It is harder to get out and exercise in a rural area than it is in a village or city People drive everywhere Traffic is a concern Sidewalks exist, but are not widely used Weather is a factor People must travel out of town for groceries People buy more food and less fresh food when they travel to [a nearby town] shop Workplace cafeterias have limited healthful choices It's hard to find something to eat in a restaurant unless you want a salad Produce is good in season
Additional insights: Capacity for change	Some groups and individuals do have the capacity to make changes

Views on obesity

One of the theoretical constructs of this study is the movement of the focus of intervention from the individual level to the community level. Thus, it is important to better understand participant perceptions of both the problem of obesity and where responsibility for the problem lies. Residents perceived obesity to be a problem in the community, and ownership of obesity was seen as both an individual and a collective problem.

Obesity is a problem here

> "We are probably larger than any population as a whole."
>
> "I do think people are overweight . . . it's a problem for a lot of people in this area."
>
> "I don't know if it's a rural thing, but I've noticed there are a lot of overweight people."
>
> "Obesity is a major health problem here."

Some participants perceived some segments of the populations to be affected more than others.

> "People of all incomes and ages are affected, but especially children and the poor."
>
> "People here are in the middle to lower income, and they seem heavier."
>
> "It's everybody, even the children."

In relation to the prevalence of obesity in the community, some participants expressed perceptions about social norms.

> "Those who are overweight are not uncomfortable about being so. It's a social norm. There's more comfort in this community about being overweight than say in other places that I've lived before."

> "People here are about average . . . It's amazing how many overweight people you see."

When addressing the question of responsibility for obesity, residents expressed a variety of opinions. Obesity was seen as a complex problem of concern to both individuals privately and the community at large. However, more participants perceived obesity as an individual concern.

Obesity is an individual problem

> "Body weight is a personal choice, or genetics."

> "I think when it comes to individuals they may feel offended and feel that it's their choice, their cross to bear, it's not necessarily their choice and don't really want to focus or dwell on it."

> "Most people would probably perceive it as a private concern."

One interview subject expressed the impact of having knowledge of healthy eating guidelines on the problem of obesity:

> "They're not hearing something they've not heard many times before."

Obesity is a collective problem

> " . . . There are complex issues behind the way people are."

> In terms of community, economics was seen as a relevant impact.

> "Weight is a community concern, it affects insurance costs that keep increasing."

> "Obesity is an individual thing but the health problems drain resources and affect the community."

One interview subject addressed the connection between weight as both an individual and a community problem:

> "Wow. I mean, I don't even think that we go as far as 'individual plus community.' I mean, people really think it's an individual's problem, and, and that's, you know, and that's really just, just not the case. And, and that—it gets hard because the individuals feel that way, too, so then you're into dealing with their self-esteem issues, and, and a lot of people around here get—especially in the winter—become very isolated, and so, you know, they're feeding their, they're feeding their loneliness, they're, they're feeding their already poor self-image. It's really—it's really difficult, and I, I think that the community has, has done a remarkably bad job of really kind of working on that issue. I mean, I think it's a community health problem. It's a public health issue, and it's not one that we've—we've done much with."

Conflicting goals for food in the community

Community members expressed interest in healthy eating, but data revealed conflicting goals for food consumption in the community. These conflicting goals were revealed by participants' perceptions of three features of the community environment for healthy eating. The first was that participants perceived food as an important component of all social and many workplace activities. The second was that food abundance and large portion sizes were seen as a sign of hospitality. The third environmental feature expressed as relevant by participants was the increasing reliance on convenience foods along with the loss of family mealtime at home. Cost was also perceived by some community members to be a factor in decisions about healthy eating.

Food is a very big part of the social and work life

> "Almost everything that goes on is involved around food."

> "Every time I hear people talking about what they did over the weekend, it centers around food. Family get-togethers, barbecues or picnics. All everybody talks about is what food they had there."

“Being on a diet here is torture.”

“It’s hard to find healthy food at community events. When you go to those things it’s impossible to eat healthy.”

“Every time I go to a business meeting they have food. Most of the time it’s bagels and muffins. Not that if you eat one bagel it’s going to make a difference, but if you go to a lot of these functions, it adds up.” Workplace food is pictured in the photos in Figures 5 and 6.

“We have a lot of covered dish dinners, traditional foods, chicken and biscuits. Farm food, heavy food.”

“Every service group—Rotary, Kiwanis, Knights of Columbus, the fire hall, they use food or dinner as a fundraiser.”

“On conference days we put out a spread. Food is a big part of it.”

“You used to go to functions without having to feed people to get ’em there, but now . . . there’s food at everything. Almost every place you go, that I can think of, there’s some kind of food. And if there isn’t, you brought it with you. You know, because you stopped at the [gas mart], or you stopped at the [the local convenience store].”

“When you go to those things it’s impossible to eat healthy.”

“Food at kid's sporting events consists of hamburgers, hot dogs chips and soda. . . . [but] kids will go for fruit if it is there.”

“It would be great if we could go out and enjoy people’s company and meet new people without having to eat.”

Figure 5. Photograph of coffee and cakes at work.
(Photovoice participant).

Figure 6. Photograph of doughnuts.
"One of our customers at work thinks that be best way to reward us all is to bring us [doughnuts]" (Photovoice participant).

Abundant food and large portion size are a sign of hospitality

> "All the time this food was being served and people were saying 'oh we've had enough to eat already,' 'oh I'm getting full all ready,' 'oh this is really much' . . . and then two desserts were served."

> "If there's parties, there's huge amounts of food. People go over to people's homes and everybody brings a dish to pass and there's tons of food and people go nuts."

> "I took the photograph of, of the bagels piled in the bins at the school and I had to learn that a bagel is more than one bread serving and it's an illusion (chuckle) that I would love to pretend I'm not aware of (laughter) yeah but I think a big problem for many of us is serving size. It's not necessarily what we're eating for some things, it's that we're eating more than we really are aware of so the kids think 'Oh I just had a bagel' and I noticed they're just like white, white breads and whole wheat and things like that so very early you know if you, at breakfast I went once to the school and they had a breakfast a serving and I was amazed at what they were serving kids for breakfast and that's empty, there's no protein there, you know in a bagel so they get hungry probably pretty quick after they eat that." A photograph of bagels is pictured in Figure 7.

Figure 7. Photograph of bagels.
"I had to learn that a bagel is more than one bread serving" (Photovoice participant).

> "You know when I was a child you got one Ring Ding in a package. Now, there's two. And I look at that, and I think, now, why did they do that?"

More people are eating take-out and convenience foods

The use of convenience foods was described by participants as relevant to the social environment for healthy eating in the local community. Participants stated that lack of time and being tired were factors that influenced the decision to use convenience foods.

> "I think people would like to eat less refined products but it's not that easy to do. You have to be awfully organized."

> "It's a lot of work to eat healthy."

> "I think a lot of people drive through. I think a lot of people pick up food. You know, it's frozen pizza, it's . . . microwaveable, whatever it is."

> "People don't want to work very hard when they're hungry."

> "If I'm too tired it's pizza night or Chinese night, and that's not always the best."

> "When people come home, they're not into looking at a thing of broccoli and cleaning it and cutting it up."

> "Kids get sodas at the gas station, or to the Chinese place."

> "We didn't drink soda growing up, it was rare. It was a treat."

> "There's no great secret why so many Americans are overweight. You go into the grocery store and if you checked off everything that was not healthy, there wouldn't be very many things. It's the convenience foods and the soda and the sweets."

> "It sounds corny but if all the fruit was turned into fruit salad, it would be so easy. I think people would eat it if it were there."

Family schedules prevent a regular dinner time

Busy lives and hectic schedules, especially for families with children, were described by residents as a relevant factor from the social environment that resulted in the loss of a regular family mealtime.

> Many kids events occur at dinner time: “There used to be a dinnertime. There is . . . there is no dinnertime Monday through Friday.”
>
> There is no more dinner together. “In my generation, it was, we sat down together, we had dinner, we talked.”
>
> ”There’s no picture of people eating a meal.”
>
> “There’s one other thing that’s missing, making food from scratch. In other words none of the basic ingredients, like you, we could have had a picture of eggs and flour and butter and you know things that you could build from and make healthy choices, right? Make something that’s healthy you know.”
>
> “Very few people sit down together anymore for dinner with their kids, that’s kind of a lost art.”
>
> “It’s school activities that make it hard to get everybody to the table once a day.”

Cost may be a factor

Some participants described cost as a relevant factor related to healthy food availability in the community. Perceptions of economic accessibility were important to food choice decisions for some of the participants.

> “When we want to eat really healthy it’s pretty expensive compared to how we were eating.”
>
> “It is much easier to buy 5 bags of potato chips than it is for the same amount of money to buy a couple of bags of salad.”
>
> “The local grocery is very expensive.”

"People want a lot for their buck."

Conflicting goals for physical activity in the community

Community members expressed interest in active living, but data revealed conflicting goals for physical activity in the community. This conflict is illustrated by participants' perceptions of the gym as not being comfortable to them socially and perceptions that community social norms support a more sedentary lifestyle. Some participants suggested that workplace social support was a feature that might be included in an intervention. These findings illustrate a conflict between a desire for active living and the way the community social environment influences community members' perceptions of physical activity.

The gym is not socially comfortable

The community includes two commercial fitness centers and three workplaces that provided gym or exercise facilities to employees (a workplace gym is pictured in the photo in Figure 8). The commercial gyms were seen by residents as not being socially accessible to all residents in the community.

> "You will find there are certain social boundaries that would be unlikely to be comfortably crossed. People who probably are accessing your health clubs might be of a different group of social mindset and history than [others in the community] of the same age group, they wouldn't socialize in the same environment."

> "The gym in the village is kind of like a gossip house."

> "It's intimidating to go to the gym."

> "I went to the gym once, but I didn't go back [because the staff was not knowledgeable]."

> "I dislike organized exercises like gyms."

Figure 8. Photograph of workplace gym equipment.
"I don't think the gym is widely used" (Photovoice participant).

Culture here accepts inactivity

The community culture supporting inactivity was seen as relevant by some participants.

> "I haven't really heard anybody encourage exercise."

> "We have a lot available as far as physical activities but not a lot of people are choosing to do them."

> "I can walk everywhere in my village. You can just walk up and down Main Street and you get to all those places [bank, library church] very easily. Time might be a factor for a lot of people and habit is another I think."

Workplace groups might be an option to consider

Some participants suggested that workplace social support was seen as a feature that might be included in an intervention.

> "What needs to happen is a workplace ethic that [physical activity] is important and not something they have to cram into the 30 minutes they have to eat lunch and relax."

"I think employers might be willing to sacrifice as long as the employees sacrifice in a combined effort, like for example if the shift ended at 4:30, if we started at 4:00 and put it to 5:00, people would give that extra half hour if the company gave a half hour."

[The workplace would be a good place to start] . . . "I think that the camaraderie between coworkers, if you're all working together towards a goal to lose weight . . . I can't lose weight, but when I go out with my girlfriends, then we can get motivated and do it together."

"Quite a few people will walk around the building or into town at lunchtime, which is a nice way to break up the day and get fresh air."

"Maybe we could offer employees flex breaks to go to gym at lunch."

"What we need is workplace changes . . . get them out to walk on grounds."

Relationship between the social and physical environments

Data from this study revealed a relationship between the social and physical environment. Physical characteristics such as availability and condition of facilities for physical activity and sources of food provide only a partial view of the environment. Findings from this study demonstrate that perceptions of social relationship to these environmental conditions influence health behavior. It's not enough to assess only the physical characteristics of a community. We have to know how community members feel about those characteristics.

Relationship between the social and physical environment: Active living

Resources are available for community use

In order to discover perceptions of how easy it is to live an active life in the community, study participants were asked about the ways in which the physical environment plays a role in physical activity choices. Community observation revealed features from the physical environment that provide recreational opportunities for physical activity including parks, basketball and tennis courts, a free

outdoor community pool, and a walking trail in the bed of a former railroad track. Community members identified these features as relevant, and some perceived that they were "lucky" to have them, but at the same time respondents indicated that they are not widely used.

> "We also have tennis and basketball courts right in Stamford. They're all free. They get some use but not too big."
>
> "…the tennis court in Stamford, that's certainly a great place to get exercise."
>
> "There's a community park in Stamford, but it's pretty crummy."

The tennis and basketball courts were mentioned in individual interviews, and during the photo elicitation focus group. They are pictured in the photo in Figure 9.

> "I took a photo of the playground [visible in Figure 10] in Stamford which has been there for quite some time. It's, it's empty right now because I, I think I took it in the fall and it probably was during school time too but I know it's a really nice facility, the whole complex I think is nice in Stamford where you've got the pool [visible in Figure 11], the tennis courts and the playground area."
>
> "There is a gym in Stamford, but I have never belonged to it."
>
> "I think the opportunities are there if people want to use them."

There is also a golf course, which is visible in the photo in Figure 12.

> "I took a picture of my pond in the back with some rowboats [visible in Figure 13] and I just thought that, I just recall when my grandchildren came the most fun that they had was at the pond, in the backyard where they could wade in, where they could go row boating, fishing. This is what they enjoyed the most and I think it's right in your backyard which is you know people don't realize, look around at what you've got."

Figure 9. Photograph of tennis and basketball courts in village park.

Figure 10. Photograph of playground.
"There is a playground . . . it's usually busy in the summer" (Photovoice participant).

Figure 11. Photograph of pool.
"We do have the pool, but it's very cold and summer is short" (Photovoice participant).

Figure 12. Photograph of golf course.
"The golf course attracts some people from the community" (Photovoice participant).

Figure 13. Photograph of backyard pond.
"I think it's right in your backyard . . . look around at what you've got" (Photovoice participant).

Activity choices are limited for adults

The availability of organized activity choices for adults was seen by some participants as a community need not currently being met in the environment.

> "There are not a lot of choices for adults [for physical activity]."
>
> "There aren't many choices for young married people, like basketball or volleyball."

A video store pictured from a passing car (Figure 14) provides some community entertainment options for adults. Participants perceived that options for youth don't extend to adults, including organized sports such as baseball. A baseball field is pictured in the photo in Figure 15.

Figure 14. Photograph of video store.
"Options for adults are limited" (Photovoice participant).

"If you're out of school you're out of luck."

Figure 15. Photograph of baseball field.
"We need lifelong activities not just team sports like baseball" (Photovoice participant)

The railroad bed is not widely used

One of the physical features observed the in community environment is an abandoned railroad bed [pictured in the photos in Figures 16 and 17] that has been maintained as a recreational trail. This 19-mile walking trail runs through both villages in the community and is a short walking distance from the center of each of the two villages. This trail was mentioned in interviews and focus groups, as well as being photographed during the photo elicitation exercise.

> "Stamford has a railroad bed, I've never walked it. In the summertime some people walk or bicycle on it."

> "I have a photo of the rail trail, where it says how many miles to get to Bloomsville and how many miles to get to Grand Gorge, I think that's really neat that we have that."

> "I'm an ex-New Yorker and the idea of walking down this wooded path by myself doesn't make me too comfortable."

> "There's so many snowmobiles (on the trail) in winter that it's dangerous and I think people kind of stay away from it."

Figure 16. Photograph of rail trail.
"We are lucky to have the trail" (Photovoice participant).

Figure 17. Photograph of rail trail from the car.
"I don't think many people use the trail" (Photovoice participant).

It is harder to get out and exercise in a rural area than it is in a village or city

A perception expressed by several participants is the impression that it is more difficult to be physically active in a rural area than it is in a larger city. Community layout, including travel distance to village centers and roadways, was seen as an environmental factor relevant to the physical activity environment.

> "You think because there's all this open space it'd be easier [to exercise] but it's not because you have to go somewhere to exercise rather than just walking out the door."

> "It's kind of counter-intuitive but I think people here get less exercise."

> "It's difficult if you live outside the villages. For example, I can't walk with the baby carriage because of traffic and dogs running loose."

> "People who do live in the villages have an easier time with exercise, you don't think about that out in the country, but you have to drive to go to the gym and whatnot."

> "I'm not steady on my feet and it makes me very nervous to walk just along beside the cars and the bushes by me."

> "My granddaughter, she's on the computer. She's not going to get out and ride a bike and today it's even so scary to let kids ride their bikes from one place to another. There is really nothing for kids, young people here."

People drive everywhere

The necessity of driving, busy roads, and sidewalks were also features of the rural environment cited by study participants as relevant factors that impact the decisions they make about being physically active. The view of the village from inside a car, taken during the photo elicitation exercise, is visible in the photo in Figure 18.

> "Nobody's walking. The little ones are out of the house into their car seats and waving."

> "We walked everywhere when I was growing up."

> "I think people are used to not walking because you have to get into a vehicle to get anywhere around."

> "I've been riding around already today. You have to drive to go anywhere."

> "There's not a lot to do in Stamford, people are used to sitting in their car and going someplace."

Traffic is a concern

> "We bought a place about just outside of town, and I thought the kids would be able to bike in and out of town, but there's no shoulders on the road, it's very curvy, up and down, after a year we decided it wasn't working. We spent all our time driving our children in and out of town. We moved closer to town and they got significantly more exercise because they had to walk to school."

> "People don't want their kids walking on the roads."

> "It's too hilly for biking, and if you don't mind the hills there's the cars. It's pretty dangerous. I don't let my son ride his bike on the road."

Figure 18. Photograph of driving.
"You have to drive to get anywhere" (Photovoice participant).

Sidewalks exist, but are not widely used

> "In town it is easier to walk because of the sidewalks." Village sidewalks are pictured in the photo in Figure 19.
>
> [Stamford has sidewalks] . . . "I could go over there, park the car and walk, but I don't."
>
> [The village] . . . "is so small you can't really walk any distance."

Figure 19. Village sidewalks.
Observation visit, June 2005.

Weather is a factor

Several participants expressed the importance of season, climate, and weather as influencing active living patterns and obesity in the community. Winter weather was seen as a barrier to physical activity.

> "Winters are long and everyone just incubates in the house."
>
> "Winters here are very long and people are afraid to go out."
>
> "People start hunkering down in October and they don't emerge until May."
>
> "The roads are narrow, and [in the winter] cars are slipping and sliding, and you're walking really on their territory."

In addition, the weather was seen as a contributor to social perceptions of body weight.

> "Everybody's bundled up. They have layers of clothes on. I don't see that people even notice that he's big or she's big."

Relationship between the social and physical environment: Healthy eating

A relationship between the social and physical environment was revealed by community members' perceptions of the physical environment for healthy eating. Results suggest that access to healthier options is relevant to eating decisions among members of the study group. Perceptions of a lack of local access to good-quality, affordable, healthy foods leads most people to shop in a community 25 miles away. Because of this travel, some participants perceived that community members purchase more food but less fresh food when they shop. In addition, healthy options were perceived to be limited at work and in local restaurants, although the local farm-stand provides fresh produce in season.

People must travel out of town for groceries

"The produce [at the local supermarket] is not the best."

"At [the local supermarket] . . . "their selection is terrible with vegetables."

"We are fortunate to have a supermarket in town but the food is remarkably awful, scary at times. It's got bad produce, if you want to get produce you're talking about going to [another town]."

"In [another town] the selection is better and the food it better but it's 27 miles away."

"When we want to eat really healthy here it's pretty expensive."

"It's hard to find the healthy foods at local stores."

"I pulled the [convenience] shop in Stamford, it's constantly busy, there's a lot of people that go in and out of there all day and I, I guess my problem is I like their ice cream you know (laughter), I crave and I have a hard time of stopping in and not getting an ice cream cone and they have light ice cream too." The convenience store is pictured in the photo in Figure 20.

"Yep that's it, yeah. You know you go into a place like [the local convenience store] and if you're really looking for something that's healthy, it's almost non-existent."

Figure 20. Photograph of [the local convenience store].
(Photovoice participant).

People buy more food and less fresh food when they travel to [a nearby town] to shop

A secondary theme mentioned by two participants is the quantity of food purchased when community members must travel a longer distance to do their regular grocery shopping.

> "People drive to [another town] to shop. They tend to buy a lot of stuff and freeze as opposed to living in a city where it's more convenient to get fresh foods. People tend to do a one or two week shopping and I think that affects the quality of what people eat."

> "When you have to drive to [a nearby town], you feel like you need to buy enough groceries for a year."

Workplace cafeterias have limited healthful choices

Participants expressed the opinion that workplace cafeterias and local restaurant menus did not include sufficient healthy options. Workplace concerns included vending, high-fat, and processed foods.

"[Cafeteria food] is deep fried before it even gets here."

"There is a cafeteria at work, but the choices tend to be on the fatty side. You have to have the will power to go over to the salad bar instead of the other stuff."

"We do have a salad bar . . . but there are also a lot of less healthy things on it."

"I chose the picture of a vending machine because I think it just represents, we live in a fast community, there isn't much time and if somebody's hungry and you can put in some coins and push a button and you have immediate gratification then go for it so I think that type of you know maybe high fat, maybe high sugar snacks are more of a convenience and not necessarily a deliberate choice. It's just I'm hungry, it's there and so I'm going to eat." A workplace vending machine is pictured in the photo in Figure 21 and workplace snacks are pictured in Figure 22.

Figure 21. Photograph of vending machines.
"Vending machines at work" (Photovoice participant).

Figure 22. Photograph of workplace snacks.
"Snacks at work" (Photovoice participant).

It's hard to find something to eat in a restaurant unless you want a salad

Restaurant menus, especially the limited choices for healthier options, were seen as a relevant environmental factor influencing local eating patterns.

> "When you walk into a restaurant, it's high fat absolutely."
>
> "It's not easy to eat out and eat healthy."
>
> "There's no decent, healthy food to be had here. You can order a salad, but sometimes they put deep fried chicken in it."
>
> "It's hard to find something to eat in a restaurant unless you want a salad."
>
> "Healthy-eating wise, we don't have that really around here."
>
> "There are a lot of pizza places . . . Chinese and other takeout places around town." The Chinese restaurant is pictured in Figure 21, with the Peachtree Café on the left. A bakery/ice cream shop is pictured in Figure 22.

Figure 23. Photograph of Chinese restaurant.
Community observation, June 2005.

Figure 24. Photograph of bakery and ice cream shop.
Community observation, June 2005.

A positive influence from the physical environment for healthy eating that was described by study participants was the availability of seasonal fresh produce grown locally. This feature of the rural environment was seen as an asset, but with limited seasonal availability.

Produce is good in season

> "Well one thing I just thought of in terms of I thought of the Farm Market thing, is I, I think seasonally things are better than off season, I mean in the summer you can get any number of wonderful fresh everything, everything, we're surrounded by it and so getting fresh produce and things like that is so simple in the summer and I think people have much better access to it. In the wintertime it's much more difficult. I mean if you want to go to [a nearby town] when the weather is bad, you can't always get there and you're stuck with whatever you happen to have so I think some of this stuff has seasonal, there's a seasonal effect to it." The farm market is pictured in the photo in Figure 25.

Figure 25. Photograph of farm market.
(Photovoice participant).

> "I also loved the fruit stand and vegetable stand that we have in Stamford and I thought this is a good way to market health because instead of just having apples in bags, looking at the different colors and then looking at the different brands and what they're used for and what would be good for an apple crisp or a munching apple and I think that's a big draw to healthy eating." Farm market produce is pictured in the photo in Figure 26.

Figure 26. Photograph of farm market produce.
(Photovoice participant).

> "There are vegetables here in the summer, and fruit at the farm stands."
>
> "If people could count on the farmers markets always being there it would be easier to plan on shopping there."

Additional insights: Community capacity for change

Study participants perceived both challenges and opportunities to change the community environment for healthy eating and active living. This is relevant to the theoretical construct of the study that moves the focus of influence from the individual to the community level. Challenges were only mentioned twice, however several participants perceived opportunities for community-level change.

Challenges

> "We have no avenue to make change. The planning board is more worried about equipment and potholes."
>
> "It's hard to change physical environment."

Opportunities

One participant even related perceived changes as a result of one of the community assessment meetings.

> "You know what's interesting is after we had our last meeting I was thinking about the next time we have snacks I'm going to do something different so I took in a big plate of apple slices, you cut them in slices and then I had a big bowl of peanut butter because my son had just gotten into this thing of dipping apple slices in peanut butter, he thinks it's the best thing and he wanted me to take that in and I took that in and, and they, after I went to get the plate and they're like 'Oh we wanted more, we wanted more' they loved it, they loved it and most of them didn't even use peanut butter because they love the apples like this."

> "If there were something that would engage the parents it would help the kids, too."

> "Our site-based council is taking a closer look at what we have for snacks. The board has publicly stated it might be willing to subsidize the cafeteria if it meant that we could therefore provide more healthy options."

> "The church ladies group might be able to encourage more vegetable dishes . . . people would eat salad if it was there."

> "We need to involve health providers, businesses."

> "Well it would be nice to have something like this kind of food or the wraps or something at a luncheon or a dinner sometime. It would be a choice."

> "The school had salad bar [that] was the talk of the town this year."

> "The booster club might be able to take on the sports snacks."

> "When you get the power to make laws, that's society changing."

Summary

Participant perceptions of social and physical influences on their eating and activity behavior are important and can be revealed. Study data suggest that an understanding of environment must include residents' perceptions of their relationship with those environments. The methods and instruments used in this study were

effective in revealing perceptions of community members about the physical and social environment that add an important dimension to the understanding of context within which individuals make eating and exercise decisions.

CHAPTER FIVE:

DISCUSSION

Introduction

I set out to investigate perceptions of physical and social influences on the community environment for healthful eating and active living. This study demonstrates that those perceptions are important and can be revealed. The use of a qualitative, constructivist, collaborative approach facilitated the examination of those perceptions within the study community. Use of these methods reflects a new way of conducting a community environmental assessment that is designed to reveal important community perceptions about the eating and physical activity environments.

The assessment identified a profile specific to the study community. Participants perceived multiple levels of influence from both the physical and social environments as having an important effect on healthy eating and active living. Constructs from both theory and public health practice contributed to study methods that facilitated a deeper understanding of community members' perceptions of local context and provided an important lens through which to view the health environment in the community. Observation, interviews, focus group discussions, and photographs provided tools for members of the community to reveal conditions that either facilitated or hindered active living and healthful eating decisions.

The study revealed data that illustrate three key themes. First, ownership of obesity is seen as both an individual and a collective problem. Second, there are conflicting goals for food and physical activity in the community. Third, there is a relationship between the social and physical environment that has not been addressed in existing models. These three key findings add an important dimension to the understanding of context within which individuals make eating and exercise decisions.

In the next section I will review each of those key findings, including reflection on theoretical constructs and implications for further research and practice.

Reflection on findings

Ownership of obesity is seen as both an individual and a collective problem

Community participants perceived obesity as an individual problem, a collective problem, or both. While obesity is caused by an energy imbalance that is ultimately determined by the individual, this study demonstrates that the community environment can either support or hinder individual efforts to consume an appropriate caloric intake for healthy body weight. When the environment includes both the physical availability of calorically dense foods in large portions and increased use of energy saving devices, the result is a population level exposure to the conditions that support an overweight or obese population (Swinburn & Egger, 2002).

This presents questions about the way public health interventions are constructed. Nutrition policy is moving toward a more environmental approach to the obesity problem (Egger et al., 2003; Green et al., 1991; Hill et al., 2003; Northridge et al., 2003; Sallis et al., 1987; Sallis et al., 2006; Swinburn & Egger, 2002)—that of acknowledging that this epidemic is a "collective responsibility involving multiple stakeholders" (Institute of Medicine, 2006, para. 3). However, this study demonstrates there are still people who think obesity is an individual problem alone. Individual behavior change models, such as the health belief model (Hochbaum, 1958), diffusion theory (Rogers, 1995), the transtheoretical model (Prochaska, 1979), and social cognitive theory (Bandura, 1977; Miller & Dollard, 1941) all identify the individual as the target of intervention, rather than the community, and fail to fully examine the context in which health decisions are made. Technical rational assessment models (Beder, 1986; Caffarella, 2002; Dewey, 1963; Tyler, 1949) take a top-down, value-neutral approach that does not address perceptions of the community environment.

Research implications of findings from this study suggest the need to understand both features of the environment and community members' relationships with that environment.

If health practitioners attempt to develop environmental interventions without addressing critically important perceptions of ownership for the problem, a conflict will arise with individuals who believe the problem does not affect them, as well as with those who believe it is their problem to deal with alone. When conducting a community assessment, researchers, practitioners, and community members need to understand the extent to which collective responsibility is perceived as shared. If we do not take collective responsibility for the problem of obesity, we will not be able to address disparities within the population. For example, community members expressed the perception that children and the poor were particularly affected, suggesting that many of those affected may not have the resources to deal with poor health. If members of the community don't take collective responsibility, they will not take action for change (Lipscomb, 2006). Understanding community perceptions of responsibility for obesity is critical to developing appropriate strategies for collective interventions.

Effective interventions must include the identification of, and development of support for, changes in those environmental factors that contribute to an obesogenic environment. For example, if a worksite group walks on the community trail at lunch three times a week, that environmental change creates social support for individual change. If smaller portions are offered in the food service environment, reducing caloric intake becomes an easier choice. These policy and social community-level changes support an environment in which making the healthy choice is the easy choice. Environmental interventions must be developed that include collaborative, grassroots identification of not only the physical features of the eating and activity

environments, but also of social expectations and norms. These social features are the key to how individuals interact with the physical environment and can be the focus of interventions to create social support for healthy eating and active living.

Conflicting goals for food and physical activity in the community

Data that emerged from this study revealed conflicting goals for food and physical activity in the community. For example, participants expressed a conflict between the social support for bringing rich, highly caloric recipes to community events and their own desire to develop more healthful eating patterns. Similarly, there was a conflict between the expressed desire to be more physically active and the social and physical barriers to increasing their own activity level. Participants reported conflicts related to use of community features and facilities for physical activity and a social environment that promotes eating often and in large portion size. These perceptions further represent a conflict between stated desires for healthier eating and exercise practices and the conditions in the local environment that support or hinder action on those desires.

This study suggests these conflicts can be more thoroughly explored by using theoretical constructs from recent public health interventions that draw upon models for assessment of community context (Green & Kreuter, 2005; Shulz & Northridge, 2004) that provide an iterative framework to consider the way health problems are produced and reproduced (Schulz & Northridge, p. 455). The conflict revealed by study data illustrates the need participate fully with community members (Fisher, 2000; Palmer, 1993) to identify these key factors and construct interventions that focus on the changeable aspects of an environment rather than the changeable aspects of the individual. The subtle conflicts reported by participants represent a contextual feature that would not have been revealed using a more traditional needs-assessment model.

Additional research is needed to explore social factors that may contribute to eating and activity patterns in communities. This suggests that a collaborative approach from within the community is necessary for intervention planning. Community participation is an important component of these environmental models, moving the role of "expert" from the university to the community. This approach engages community members to address these contextual factors by identifying opportunities for change and building an environment of social support for participating in those changes. For example, walking clubs might make activity seem like a more accessible choice. Offering reduced portions in locations where food is served creates a normative option to choose a more appropriate serving size.

There is a relationship between the social and physical environment that has not been addressed in existing models

The environment for healthful eating and active living includes community characteristics such as availability and condition of facilities for physical activity (gyms, playgrounds, trails, sidewalks). It also includes accessibility of energy-dense foods, portion sizes, and policies and social norms related to food access and physical activity in schools and workplaces and in the community at large (Hill et al., 2003; Sallis et al., 2006). Findings from this study demonstrate that perceptions of these environmental conditions influence health behavior. It is not enough to assess only the physical characteristics of a community; we have to know how community members feel about what is there. For example, as stated in the findings (Chapter 4), study participants indicated that there were gyms and other facilities for organized physical activity in town, but social boundaries limit access to those facilities. The community includes a walking trail, but dogs, snowmobiles, weather, and safety limit its use for walking. Park facilities exist, but their use is limited by season and by conditions that are perceived to be "crummy." Additional factors from the physical environment

identified by study participants as having an impact on physical activity were rural living, dependence on driving, roads, traffic, and weather. Examples of factors perceived as relevant from the environment for healthy eating were food being served at work when it is not desired, including being used as a reward and as a constant feature at meetings. Social events include food in large portions that is served even when guests indicate they are full; and life schedules that may promote the use of convenience and take-out foods while eroding the family dinner hour. Influences from the physical environment for healthy eating perceived by participants were lack of availability of healthy, fresh, inexpensive grocery options in the local community, and limited healthy choices in restaurants and workplace cafeterias. Grocery stores and cafeterias were observed in the community, but it is the perceptions of the quality and availability of healthful choices that influenced participants' use of these facilities.

These perceptions are important because they reveal a dimension of context that has not been fully explored in nutrition education models. The assessment process illustrated that it is not what people know about healthy eating and active living that determines their behavior. "They're not hearing something they've not heard many times before" (interview participant, June 2004). Instead, it was whether they were able to take action based on what they knew in the context of the physical and social environment. Instead of disseminating information (Hochbaum, 1958; Rogers, 1995) researchers and practitioners have a role to play in supporting community environmental change (Friere, 1970, 1973) so that making the healthy choice is possible.

There were indicators for this community capacity for change in the respondents' perceptions. Participants described changes made as a result of participating in the community assessment. One focus group participant observed, "You know what's interesting is after we had our last meeting I was thinking about the

next time we have snacks I'm going to bring something different . . . so I took in a big plate of apple slices . . . " Another participant said, "The church ladies group might be able to encourage more vegetable dishes . . . people could eat salad if it was there."

We must gain an understanding of the complex social and physical factors that community members perceive as influences upon the adoption or maintenance of health behaviors. This attention to context is important to planning, implementing, and evaluating health promotion projects (DiClemente et al., 2002). Models for intervention must include community-level strategies to build social support for both changes in the physical environment (such as healthier options in cafeterias, and walking groups) and for use of those options as a community social norm.

Reflection on methods

The use of observation, interviews, photo elicitation, and focus groups provided a foundation for the exploration of perceptions of the community environment. Observation data that were gathered early in the process helped later when some of the observed features were mentioned by study participants. It would not have been possible to participate meaningfully in the interviews and focus group discussions without first spending time in the community to obtain a basic physical orientation. Interviews provided the most in-depth data from each subject; however, my sample was biased toward individuals who were interested in community participation and connected to groups or others in the study area. A broader representation of community members would have enhanced the study. The photo-elicitation activity was helpful in both engaging and collaborating with community members in the research process and in revealing additional perceptions of the eating and physical activity environment. The design of this portion of the study worked well because it combined individuals taking the photos with group analysis and discussion of their meaning. A limitation of this process was in the number of cameras that were

distributed. While 8 of the 11 distributed cameras were returned with photos, a wider distribution of cameras would have revealed perceptions of a larger segment of the community. The focus groups revealed data that validated results from the interviews, observations, and photographs.

Conducting an environmental assessment requires considerable time and resources. The most important of these is the participation necessary to create a process that is collaborative and community-based. An iterative, inclusive examination of the environment will help members of a community to identify relevant factors from the physical and social environments and to select sustainable interventions. The model used in this study provides a strong design for an assessment of community perceptions. However, it also present some challenges. As mentioned above, the time required for community members and researchers to thoroughly assess community perceptions might create a prohibitive barrier for practitioners with limited time and resources. In addition, those who facilitate the assessment activities require a background in qualitative study and a willingness to let the participants express their perceptions without adding editorial comment. Because collaboration is an important construct of this process, another feature that is necessary is broad and deep representation in the process. Community members of all roles are needed to reveal perspectives from different vantage points and to participate in data collection activities. People from a broad range of backgrounds, classes, and races would enhance study results by providing a wider view. Participation by those in leadership roles can help when support for creating community-level changes is needed. Increased representation and participation by members of the community at large may enhance the level of support for participation in community-level interventions when they are implemented. The sustainability of both the intervention process and any

interventions developed as a result would depend on whether the members of the community were committed to providing time, talent, and resources.

While this study focused only on the qualitative features of the assessment, other assessment tools include surveys, inventories of foods available, and inventories of resources for and features of facilities for physical activity. Those quantitative assessments can be used to provide a deeper understanding of the community and to more clearly identify the ways in which the social and physical environments interact. The research question provided the foundation to ask questions that would reveal perceptions of how easy it is to eat healthy and live an active life in the study community. The triangulation of data from interviews, observation, photo elicitation, and focus group discussion strengthen the findings. This broad scope of activities allowed researchers and members of the community to "see" the environment from many different angles.

The study design revealed data that illustrate a relationship between the social and physical environment that has not been addressed in existing models. This relationship adds an important dimension to the understanding of contexts in which individuals make eating and exercise decisions. The methods used provide a model for conducting a qualitative environmental assessment, which was the second objective of the study. A triangulation (Patton, 2002) of methodologies, theories, data, and investigators was used, which strengthened the validity of the study (Denzin & Lincoln, 2003). Throughout the assessment, collaborators from the university and the community reflected actively on the process, asking, what are we learning? What are we missing? This reflective practice produced an iterative and organic process as the study developed. Data from each assessment activity contributed to subsequent activities, resulting in ongoing development of planned activities.

Consideration of perceptions of the local environment and context are critical components of health promotion planning. Understanding these perceptions is necessary to move thinking of health problems beyond the scope of individual behavior (Bartholomew et al., 2000) and to develop a more refined view of the context in educational models (Cervero & Wilson, 2006). From this study it is clear that it is not enough to simply assess the availability of physical features such as sidewalks and cafeterias. This study demonstrates that the way community members perceive these elements of the physical environment provides an important insight into health behavior. This new approach builds on the existing literature and moves the field of nutrition education to a new level by more fully recognizing the role of perceptions of environmental influences on behavior and moving the focus of intervention beyond simply assessing an individual's knowledge gaps. Instead, it calls for change at the community and policy levels to impact the environment in which individuals make health decisions.

Study limitations

Because this study was a real-world field test, limitations included time and funding. If researchers had been able to spend more time in the community, even living there, a much clearer picture of the local environment would have emerged. Temporal factors such as season could have been better observed, and missing voices would have been sought. Even with careful attention to study sample, the findings were limited by access to only the represented social networks of individuals who participated. The collaborative nature of the design began with contact with two strong community agencies (Cooperative Extension and the Delaware County Cancer Coalition); from there, study participants were sought using both snowball and purposeful sampling (Mason, 2002; Patton, 2002). While the study sample included people of different age, gender, ethnicity, income, and education, the willingness to

participate in the research process created a self-selected group. The credibility and representativeness of the study would have been strengthened by inclusion of more individuals from a wider range of educational and economic and cultural profiles. There may be features of the community that I never saw or heard about because of the nature of the study sample.

In terms of study design, one missing piece was an assessment of the ways community residents interacted with the environments they perceived. While participants expressed their perceptions of the physical and social environments, I was unable to connect behavior to perceptions using this study design. I only know what they told me, and not what they actually did relative to healthful eating and active living. The validity of the perceptions of relevance expressed by the study participants would have been greater if we could identify underlying factors that might mask the reasons for behavior choices.

Finally, the choice to focus my eyes and ears on selected influences (physical and social influences on the eating and physical activity environment) created boundaries around the data collection and interpretation of results. These boundaries were necessary to create a functional structure from which to examine the data; however, setting up categories in this fashion limits and shapes the way data are collected and interpreted.

Implications for practice and research

Until recently, efforts to address the problem of obesity have centered on technical rational education models and individual behavior-change. The results of this study suggest that perceptions of the influences of the physical and social environment are also important and must be included. There are clear examples in the data from this study that illustrate perceptions of the relationship between social and physical environment. This relationship is not explicitly included in existing models for

nutrition education practice. The implications of this are that researchers, Cooperative Extension educators, and health practitioners must include assessment of these perceptions in future assessments in order to develop contextually relevant public health intervention projects.

Population-level solutions are necessary to address public health problems such as obesity. This community approach requires attention to the relationship of both physical and social context in the development of such projects. While learner-centered approaches have historically been used in adult education (Lindeman, 1926), perceptions of the environmental context in which learners act have not been fully defined and explored in the literature (Cervero & Wilson, 2006). This study begins to address that gap by focusing on perceptions of the community environment made by residents themselves. Understanding these individual perceptions begins to shed light on a dimension of environment that has not been fully explored.

This study reveals that is important to look not just at features from the physical environment, such as walking trails and salad bars, but to also learn about community members' perceptions of those features. The relationship between the physical and social environment provides an important dimension of context that should be explored. Individual perceptions shed light on factors of influence that might not otherwise be apparent to researchers or to community health practitioners using technical rational assessment of knowledge gaps. This study demonstrates that these perceptions can be captured and provides an important foundation for exploring locally tailored, community-based approaches to obesity prevention. Such an approach requires more time, resources, skills, and participants than a more traditional educational needs assessment; however, use of this approach can reveal valuable contextual dimensions for intervention planning.

The multi-dimensional and collaborative assessment process used in this study provides a model for future testing in additional communities. More research is needed to provide both theoretical refinement and testing of this methodological approach to improve community nutrition practice and policy. Field testing will be necessary to fine-tune the necessary steps and to provide guidelines on adapting the process to different settings. In addition, testing is recommended in communities in different regions and with different demographic profiles, and longitudinal studies are necessary in order to assess the long-term impact of projects conducted as a result of environmental assessments such as the one described in this project. The term "community" can apply to smaller settings such as the workplace or neighborhood environment. The characteristics of each individual community setting would guide researchers to ask relevant questions, and those questions determine the methods and models best used.

The field of nutrition education has begun to examine environment as an important component of intervention planning. This study demonstrates the need to expand that view to include community members' perceptions of the environment as an important dimension of community context. This model of assessment provides a more complete view of the lay of the land.

Postscript

The project described in this thesis continued beyond the assessment phase. Following data collection, the results were evaluated and interpreted by members of the community at a public meeting in June 2005. A prioritization matrix developed as a result of the meanings in that data that were identified by the community. This matrix was mailed in survey form to everyone who had participated over the course of the assessment process (n=63) and to additional individuals and organizations as identified by members of the Community Leadership Coalition. Project interventions

selected as a result of that prioritization process were developed in 2005–2006 and tested during a community-wide intervention in 2006. The results of that intervention are currently being analyzed. The assessment model used in this project will be tested in four worksite locations during 2007.

APPENDIX A:

CONSENT FORM

Reducing Breast Cancer Risk in Rural Communities
A Project of the Cornell University Program on Breast Cancer and Environmental Risk Factors (BCERF)

INTERVIEW CONSENT FORM

This is a study about obesity prevention and breast cancer in Delaware County. You were chosen to participate by BCERF and Cornell Cooperative Extension of Delaware County. We ask that you read this form and ask any questions you may have before agreeing to be in the study.

Purpose

The purpose of this research project is to learn about the ways in which a community approach to environmental change can reduce risks of obesity and breast cancer for members of the community.

Project Description

If you agree to join the study, we will ask you to participate in interviews to help assess local strategies to address obesity prevention and breast cancer risk reduction in your community. The time commitment will be 1–2 hours over a year for most participants. Today's interview will take an hour or less. Some participants will be involved in a working group who will plan a community activity in Delaware County later in the year. For a few people who decide to participate in multiple activities the total time commitment will be not more than 10–15 hours. Meetings and interviews will take place at convenient locations in Northern Delaware County.

Risks and Benefits of Participation

We do not anticipate any risks to you for participating in this study, other than those encountered in day-to-day life.

The benefits to participating are the development and use educational resources in the community to try out a new educational approach for obesity prevention and breast cancer risk reduction.

Your decision whether or not to participate will not affect your current or future relations with Cornell University or Delaware County Cooperative Extension. If you decide to participate, you are free to withdraw at any time without affecting those relationships.

Confidentiality

The records of this study will be kept private, however, the collaborative nature of this project will make it likely that you may know others who are participating. For that reason, the confidentiality of your participation meetings cannot be promised. However, in any sort of report we might publish, we will not include any information that will make it possible to identify you. Research records will be kept in a locked file; only the researchers will have access to the records. Tape recordings of interviews will only be accessible to the investigators involved in this study, and names will be removed. Any reports developed will mask both identity and location. This study is for educational purposes only. Records will be kept for five years after completion of the study.

Contacts and Questions

The researchers conducting this study are Dr. Carol Devine, Dr. Barbour Warren, and Mary Maley. Please ask any questions you have now. If you have questions later, you may contact them at Cornell University by calling 607–254–2893. If you have any questions or concerns regarding your rights as a subject in this study, you may contact the University Committee on Human Subjects (UCHS) at 607–255–5138, or access their website at http://www.osp.cornell.edu/Compliance/UCHS/homepageUCHS.htm.

You will be given a copy of this form to keep for your records.

Statement of Consent: The purpose of this research has been explained to me. I understand that I will participate in an interview and be expected to offer my comments and opinions about the topics covered. I am participating of my own free will. I understand that I may refuse to answer any question or drop out of the group at any time. I may ask that my opinions not be used if I decide to drop out. I understand that my name will not be used, and that the names of all the people in the project will be kept confidential.

Signature _____

Date _____

I agree to have my comments audio-taped.

Signature_____

Date_____

This consent form was approved by UCHS on March 8, 2004

APPENDIX B:

INTERVIEW GUIDE

INTERVIEW GUIDE

DATE:_____ NUMBER:_____

THANK YOU FOR BEING WILLING TO TALK WITH ME TODAY ABOUT HEALTH ISSUES HERE IN NORTHERN DELAWARE COUNTY.

WHAT ARE SOME OF THE HEALTH PROBLEMS THAT CONCERN PEOPLE IN THIS AREA?

WHAT ABOUT BREAST CANCER?

ARE ANY OF THESE OF CONCERN TO YOU OR YOUR FAMILY?

WHAT, IF ANYTHING HAVE YOU HEARD ABOUT THE RELATIONSHIP BETWEEN BODY WEIGHT AND BREAST CANCER RISK?

HOW WOULD YOU DESCRIBE THE BODY WEIGHT OF PEOPLE IN THIS COMMUNITY?

HOW PREVALENT?

HOW MUCH OF A PROBLEM?

WHO IS AFFECTED?

WHAT ARE SOME OF THE WAYS THAT THE COMMUNITY MIGHT CONTRIBUTE TO THE PROBLEM OF OVERWEIGHT?

THE WAY THE COMMUNITY IS LAID OUT?

OPPORTUNITIES, COSTS FOR PHYSICAL ACTIVITY

SOURCES, TYPES, COST OF FOOD

SOCIAL EXPECTATIONS FOR EATING AND EXERCISE

SOCIAL EVENTS: CHURCH, SCHOOL, RECREATION, ARTS

POLICIES, INSTITUTIONS (SCHOOLS, RECREATION, WORK PLACES)

WHAT ARE SOME OF THE WAYS THAT THE COMMUNITY MIGHT MAKE IT EASIER FOR PEOPLE WHO LIVE HERE TO MAINTAIN HEALTHY BODY WEIGHTS OR TO LOSE WEIGHT IF THEY WERE OVERWEIGHT?

THE WAY THE COMMUNITY IS LAID OUT?

OPPORTUNITIES, COSTS FOR PHYSICAL ACTIVITY

SOURCES, TYPES, COST OF FOOD

SOCIAL EXPECTATIONS FOR EATING AND EXERCISE

POLICIES, INSTITUTIONS (SCHOOLS, RECREATION, WORK PLACES)

SOME PEOPLE THINK THAT BODY WEIGHT IS MOSTLY AN INDIVIDUAL CONCERN. WHAT DO YOU THINK ABOUT THAT?

SOME PEOPLE THINK THAT THE PROBLEM OF OVERWEIGHT IS A COMMUNITY CONCERN IN ADDITION TO BEING AN INDIVIDUAL CONCERN. WHAT DO YOU THINK ABOUT THAT?

IF A GROUP WANTED TO TAKE ACTION HERE IN STANFORD TO ADDRESS THE ISSUES OF BODY WEIGHT AND BREAST CANCER RISK AT THE COMMUNITY LEVEL, WHAT KINDS OF THINGS SHOULD BE CONSIDERED?

WHAT KINDS OF GROUPS OR PEOPLE SHOULD BE INCLUDED?

HOW DO YOU THINK PEOPLE LIKE YOU SHOULD BE INVOLVED?

IS THERE ANYTHING ELSE YOU'D LIKE TO SAY?

IS THERE ANYONE ELSE IN THE COMMUNITY THAT WOULD BE HELPFUL FOR ME TO SPEAK WITH?

APPENDIX C:

OBSERVATION GUIDE

OBSERVATION GUIDE: DRIVING TOUR JUNE 2005

Public works: streets, sidewalks, street lights (availability, condition)Bike lanes, width of roads (for walking, biking)

Buildings and facilities: schools, parks, community centers, work places, shopping (hours, location and distance from each other and from sources of food and/or exercise) fitness facilities

Sources of food: all restaurants, stores, farm stands, other sources?

Topographical features: any topographical features unique to the area that might factor into our plans (such as rail road bed trails, natural scenic areas, bodies of water, etc.) seasonal access issues

Costs? Access?

APPENDIX D:

LAY OF THE LAND MAPPING AND DISCUSSION GUIDE

Building healthy Eating and Activity friendly Neighborhoods (BEAN)

Year I: Assessing the Community
October 19, 2004 5:30–7:30pm
Robinson Terrace, Stamford NY

Meeting 1: Orientation for the Community Leadership Group

Project Description:

Overweight and obesity among US women have risen to epidemic levels. Along with other health problems, obesity has been linked to a doubling of the risk of breast cancer among postmenopausal women. The Community Working Group will explore ways to build healthy eating and activity friendly neighborhoods using a positive, collaborative approach. In the first year, we'll conduct a needs assessment to identify community activities that support healthy eating and physical activity and places for improvement

Agenda

1. Light Supper and Introductions

2. Cornell Cooperative Extension of Delaware County and the Delaware County Breast Cancer Coalition-Jeanne Darling

3. What is this project and what is my role?-Carol Devine

4. Overview of obesity in New York-Barbour Warren

5. What is an environmental approach to obesity prevention-Carol Devine

6. Group Mapping Activity

   Group A: map the <u>eating environment</u>-facilitator Carol Devine

   Each person working alone makes a map or list of her/his community, showing all of the places where food is eaten

   Now for each place on the map, add the places the food comes from

Small group discussion of maps

What sorts of things did you consider?
What do you notice about your map?
What are some of the ways that the community characteristics affect the way you eat (Choose a recorder to write down the responses to question 3 to share with the other group)

Group B: map the physical activity environment-facilitator Mary Maley

Each person working alone makes a map or list of her/his community, showing all of the places where you are physically active

Now for each place on the map, add the types of physical activity you do there

Small group discussion of maps

What sorts of things did you consider?
What do you notice about your map?
What are some of the ways that the community characteristics affect your physical activity? (Choose a recorder to write down the responses to question 3 to share with the other group)

7. Sharing between the eating and physical activity groups

8. What's next?-Mary Maley

    a. Calendar for the project year, set next meeting
    b. Communication within group
    c. Task for next meeting: **Picture My Community**

        - Using the disposable camera provided, take 12 pictures that best show the food and physical activity environment of your daily life. (please don't show identifiable people)

        - Include:
            1. What and where people eat in the community
            2. How and where people are active or not active in the community
            3. Special features of the community that affect eating and physical activity

        - Mail the cameras to Mary Maley in the postage paid envelope by November 1, 2004, and we'll show them at our next meeting.

APPENDIX E:

PHOTO ELICITATION DISCUSSION GUIDE

Discussion Guide

Part One: Introduction to discussion

Thank you all for taking the time to take photos of the community.

We got at total of 113 photos back, and we're looking forward to discussing them with you tonight.

The most important part of this process is hearing your interpretations, both of your own photos and those that other people took.

There are no right or wrong comments, but rather differing points of view. Please feel free to share your point of view even if it differs from what others have said.

Keep in mind that we're interested in both negative comments and positive comments. We're tape recording this part of our discussion because we don't want to miss any of your comments.

People often say very helpful things in these discussions and we can't write fast enough to get them all down.

Process Observations:

Taking photographs allows us to look at our surroundings in a new way.

Sometimes we notice things with the camera that we wouldn't otherwise see.

What sorts of things did you notice while you were doing this?

What were some of the things it made you think of?

Physical Activity Environment Observations

Choose a photo or two from the display boards that you'd like to tell us about in regard to the physical activity environment.

What did you like about the photo you chose?

What does it represent?

Of all the photos we've seen of the physical activity environment, what do you think is most important?

What parts of the physical activity environment aren't represented in these photos?

Eating Environment Observations

Choose a photo or two from the display boards that you'd like to tell us about in regard to the eating environment.

What did you like about the photo you chose?

What does it represent?

Of all the photos we've seen of the eating environment, what do you think is most important?

What parts of the eating environment aren't represented in these photos?

Summary Questions

How well do you think the photos we've seen represent the eating and physical activity environment in this community?

Have we missed anything?

Thank you very much for sharing your impressions with us

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My thesis is currently in review, but I expect it to be completed by December 2006. The title is: Learning the Lay of the Land: Needs Assessment for a Community Environmental Approach to Obesity Prevention.

Please let me know if you require additional information.

Thank you very much for your consideration.

Mary Maley

Mary Maley
Health Educator
Program on Breast Cancer and Environmental Risk Factors (BCERF)
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